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                                                                                    FILE 20
8080 MACRO ASSEMBLER, VER 2.4          ERRORS = 0 PAGE 1                            FILE 20
                                                                                    FILE 20
                                                                                    FILE 20
                                                                                    FILE 20
                    ;     1. F I L E                                                FILE 20
                    ;SY1011-25/10/77 - 0905 HOURS                                   FILE 20
                    ;*********************                                          FILE 20
                    ; VERSION LEVEL CODE *  SY1011  MAIN CODE W A Z                 FILE 20
                    ;                         VERSIONZ 21MX                         FILE 20
                    ;                                                               FILE 20
                    ;*********************                                          FILE 20
  0050              VERSN  EQU  120Q       ;P => VERSION 0                          FILE 20
                    ;                                                               FILE 20
                    ;                                                               FILE 20
                    ;                                                               FILE 20
                    ;                                                               FILE 20
                    ;                                                               FILE 20
                    ;  COMMON EQUATES - CM34 - 6/10/76 - 1315 HRS.                  FILE 20
                    ;                                                               FILE 20
  9100              FTRAM  EQU  110400Q   ;FAST RAM LOWER LIMIT                     FILE 20
                    ;**************************************                         FILE 20
                    ; KBDCSW - KEYBOARD DATA COMM SWITCHES *                        FILE 20
                    ;**************************************                         FILE 20
  0080              FLDUP  EQU  200Q       ;HALF/FULL DUPLEX                        FILE 20
                    ;*************************************                          FILE 20
                    ; KBJMPR - KEYBOARD INTERFACE JUMPERS *                         FILE 20
                    ;*************************************                          FILE 20
                    ;                                                               FILE 20
                    ;  JUMPERS SENSED AS 0' WHEN INSERTED                           FILE 20
                    ;                                                               FILE 20
                    ;  ALL JUMPERS ARE NORMALLY INSERTED                            FILE 20
                    ;                                                               FILE 20
  0001              CNDIS  EQU 001Q      ;CONTROL CODE DISABLE                      FILE 20
                    ;                      (0=DISABLED)                             FILE 20
  0002              SLDIS  EQU 002Q      ;SPOW LATCH DISABLE                        FILE 20
                    ;                      (0=DISABLED)                             FILE 20
  0004              LNWRP  EQU 004Q      ;COLUMN 80 AUTO CR,LF                      FILE 20     STRAP C muss offen sein
                    ;                      (0=ENABLED)                              FILE 20
  0008              PGSTR  EQU 010Q      ;PAGE MODE STRAP                           FILE 20
                    ;                      (0=LINE-FIELD MODE)                      FILE 20     30
  0010              LFPOS  EQU 20Q       ;LINE FEED POSITION                        FILE 20
                                           (0 = POSITION LINE FEED                  FILE 20
                    ;                           AT START OF NEXT I/O                FILE 20
                    ;                           READ                                FILE 20
                    ;                       1 = PUT LINE FEED AT END                FILE 20
                    ;                           OF RECORD)                          FILE 20
  0020              FTSND  EQU 40Q       ;9600 BAUD DATACOM SHIFT                   FILE 20
                    ;                      (0=9600 BAUD FOR ESC,E)                  FILE 20
  0040              HDSHK  EQU 100Q      ;BLOCK TRANSFER HANDSHAKE                  FILE 20
                    ;                      (0 = FOLLOW DC2SND SETTING               FILE 20
                    ;                       1 = SEND DC2 BEFORE DATA)               FILE 20
  0080              D2SND  EQU 200Q                                                 FILE 20
                                           (0 = SEND DC2 ON ENTER                   FILE 20
                    ;                           AND FUNCTION KEY IN                 FILE 20
                    ;                           BLOCK MODE                          FILE 20
                    ;                       1 = INHIBIT ALL DC2                     FILE 20
                    ;                           HANDSHAKE)                          FILE 20
                    ;                                                               FILE 20
                    ;****************************************                       FILE 20
                    ; KBJMP2 - SECOND SET OF KEYBOARD JUMPERS *                     FILE 20
                    ;****************************************                       FILE 20
  0001              ATTRM  EQU  1Q        ;AUTO TERMINATE ON "ENTER"                FILE 20
  0002              CRTRM  EQU  2Q        ;CLEAR TERMINATOR ON TRANSMI              FILE 20
  0004              NTEST  EQU  4Q        ;INHIBIT TERMINAL SELF-TEST               FILE 20
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                                                                      FILE 20
                                                                      FILE 20
                                                                      FILE 20
                                                                      FILE 20
                                                                      FILE 20
0008         ETWRP  EQU  10Q        ;INVERT SENSE OF EDIT WRAP        FILE 20
0010         PNTAL  EQU  20Q        ;SEND ALL CODES TO PRINTER        FILE 20
0080         DJMPO  EQU  200Q       ;DATA COMM JUMPER                 FILE 20
             ;****************************************                FILE 20
             ; KBJMP3 - THIRD SET OF KEYBOARD JUMPERS *               FILE 20
             ;****************************************                FILE 20
0001         DJMP1  EQU  1Q         ;DATA COMM JUMPERS                FILE 20
0002         DJMP2  EQU  2Q               ;.                          FILE 20
0004         DJMP3  EQU  4Q               ;.                          FILE 20
0008         DJMP4  EQU  10Q              ;.                          FILE 20
0010         NDCST  EQU  20Q        ;INHIBIT DATA COMM SELF-TEST      FILE 20
             ;                        (0 = DISABLED)                  FILE 20
0020         SETCH  EQU  40Q        ;TURN ON "CH" CONTROL LINE        FILE 20
             ;                        (0 = OFF, 1 = ON)               FILE 20
0040         CEKCC  EQU  100Q       ;MONITOR CC CONTROL LINE          FILE 20
             ;                        (1 = ENABLED)                   FILE 20
0080         FCPTY  EQU  200Q       ;FORCE PARITY ON/NO IN CHECK      FILE 20
             ;                        (1 = ENABLED)                   FILE 20
             ;************************                                FILE 20
             ; CMFLGS - COMMON FLAGS *                                FILE 20
             ;************************                                FILE 20
0001         BKTRG  EQU  1Q         ;BLOCK TRANSFER TRIGGER           FILE 20
0002         ISWRP  EQU  2Q         ;INSERT WITH WRAP AROUND          FILE 20
0004         FCRST  EQU  4Q         ;FORCE FULL TERMINAL RESET        FILE 20
0008         DFSKY  EQU  10Q        ;DEFINE SOFT KEY MODE ENABLE      FILE 20
0010         RMSET  EQU  20Q        ;REMOTE MODE ENABLED              FILE 20
0020         RVMDE  EQU  40Q        ;TERMINAL IN RECEIVE MODE         FILE 20
             ;***********************                                 FILE 20
             ; ERRFLG - ERROR FLAGS *                                 FILE 20
             ;***********************                                 FILE 20
0001         DMERR  EQU  1Q         ;DATACOM (1 = ERROR)              FILE 20
0002         TSTOK  EQU  2Q         ;SELF-TEST (0 = ERROR)            FILE 20
0004         LRCHK  EQU  4Q         ;LOADER CHECKSUM (0 = ERROR)      FILE 20
             ;**************************                              FILE 20
             ; INTFLG - INTERRUPT FLAG *                              FILE 20
             ;**************************                              FILE 20
0003         TRINT  EQU  3          ;TIMER INTERRUPT                  FILE 20
             ;                                                        FILE 20
             ;***********************************                     FILE 20
             ; PRCCTL - PROCESSOR CONTROL FLAGS *                     FILE 20
             ;***********************************                     FILE 20
0000         TIACK  EQU  0Q         ;ACKNOWLEDGE TIMER INTERRUPT      FILE 20
             ;                        (BIT 1 OFF)                     FILE 20
0001         TMRON  EQU  1Q         ;SET TIMER ON                     FILE 20
0002         TMIEN  EQU  2Q         ;RE-ENABLE TIMER INTERRUPT        FILE 20
0010         DIOFF  EQU  20Q        ;DISABLE DATA COMM INTERRUPT      FILE 20
0020         TIOFF  EQU  40Q        ;DISABLE TIMER INTERRUPTS         FILE 20
0040         POLL   EQU  100Q       ;POLL CTU INTERRUPTS              FILE 20
             ;V*V*V*V*  SET TO ZERO FOR ROM VERSION  *V*V*V*V*        FILE 20
0080         STROM  EQU  200Q       ;DISABLE (1)/ENABLE (0) ROM       FILE 20
             ;*********************************                       FILE 20
             ; MDFLG1 - TERMINAL MODE FLAGS 1 *                       FILE 20
             ;*********************************                       FILE 20
0001         DPFNC  EQU  1Q         ;DISPLAY FUNCTIONS ENABLED        FILE 20
0002         ISCHR  EQU  2Q         ;INSERT CHARACTER ENABLED         FILE 20
0004         MMLOK  EQU  4Q         ;MEMORY LOCK ENABLED              FILE 20
0008         FRMAT  EQU  10Q        ;FORMAT MODE ENABLED              FILE 20
0010         EDIT   EQU  20Q        ;EDIT MODE ENABLED                FILE 20
0020         SLECT  EQU  40Q        ;SELECT MODE ENABLED              FILE 20
0040         RCORD  EQU  100Q       ;RECORD MODE ENABLED              FILE 20
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                                                                FILE 20
                                                                FILE 20
                                                                FILE 20
                                                                FILE 20
                                                                FILE 20
0080            FORGN  EQU  200Q       ;FOREIGN MODE ENABLED     FILE 20
                ;*******************************                FILE 20
                ; MDFLG2 - TERMINAL MODE FLAGS 2 *              FILE 20
                ;*******************************                FILE 20
0001            CPSLK  EQU  1Q         ;CAPS LOCK ENABLED        FILE 20
0002            BKMDE  EQU  2Q         ;BLOCK MODE ENABLED       FILE 20
0004            ATOLF  EQU  4Q         ;AUTO LF ENABLED          FILE 20
0008            RMOTE  EQU  10Q        ;REMOTE ENABLED           FILE 20
0020            WBSR   EQU  40Q        ;WRITE-BACKSPACE-READ MODE FILE 20
                ;*********************************************  FILE 20
                ; RADIX - BASE OF INPUT PARAMETER FOR ESC SEQ * FILE 20
                ;*********************************************  FILE 20
000A            DCRDX  EQU  10         ;DECIMAL NUMBERS          FILE 20
0008            OTRDX  EQU  8          ;OCTAL NUMBERS            FILE 20
                ;                                               FILE 20
                ;******************                             FILE 20
                ; COMMON VARIABLES *                            FILE 20
                ;******************                             FILE 20
9165            ITVEC  EQU  FTRAM+145Q   ;CENTRAL INTERRUPT VECTOR FILE 20
9168            SNVEC  EQU  ITVEC+3    ;FOREIGN TERMINAL DISPLY SCA FILE 20
                ;                                               FILE 20
FFFF            CMMON  EQU  177777Q    ;UPPER LIMIT OF COMMON AREA FILE 20
00FF            CBASE  EQU  CMMON/256    ;MSB OF COMMON ADDRESSES FILE 20
FF00            CSTOR  EQU  CBASE*256    ;MSB ADJUSTMENT FACTOR  FILE 20
                ;                                               FILE 20
FFFE            DSPST  EQU  CMMON-1    ;DISPLAY REFRESH START PTR FILE 20
FFFD            TMTYP  EQU  DSPST-1    ;TERMINAL TYPE NUMBER     FILE 20
FFFC            KDCSW  EQU  TMTYP-1    ;KEYBOARD DATACOM SWITCHES FILE 20
FFFB            KJMPR  EQU  KDCSW-1    ;KEYBOARD STRAPS          FILE 20
FFFA            KJMP2  EQU  KJMPR-1      ;SET 2                  FILE 20
FFF9            KJMP3  EQU  KJMP2-1      ;SET 3                  FILE 20
FFF8            CFLGS  EQU  KJMP3-1    ;COMMON FLAGS             FILE 20
FFF7            ERFLG  EQU  CFLGS-1    ;ERROR FLAGS              FILE 20
FFF6            ITFLG  EQU  ERFLG-1    ;INTERRUPT FLAG           FILE 20
FFF5            PCCTL  EQU  ITFLG-1    ;PROCESSOR CONTROL FLAGS  FILE 20
FFF4            MFLG1  EQU  PCCTL-1    ;TERMINAL MODE FLAGS 1    FILE 20
FFF3            MFLG2  EQU  MFLG1-1      ;AND 2                  FILE 20
FFF1            MGPT1  EQU  MFLG2-2    ;MESSAGE POINTERS         FILE 20
FFEF            MGPT2  EQU  MGPT1-2         ;.                   FILE 20
FFED            MGPT3  EQU  MGPT2-2         ;.                   FILE 20
FFEB            MGPT4  EQU  MGPT3-2         ;.                   FILE 20
FFE9            MGPT5  EQU  MGPT4-2         ;.                   FILE 20
FFE7            MGPT6  EQU  MGPT5-2         ;.                   FILE 20
FFE5            MGPT7  EQU  MGPT6-2         ;.                   FILE 20
FFE3            MGPT8  EQU  MGPT7-2         ;.                   FILE 20
FFE1            CIVEC  EQU  MGPT8-2    ;CTU INTERRUPT VECTOR     FILE 20
FFE0            CIJMP  EQU  CIVEC-1    ;JUMP CODE FOR VECTOR     FILE 20
FFDE            IDATA  EQU  CIJMP-2    ;ESQ SEQ PARM ACCUMULATOR FILE 20
FFDD            ICSGN  EQU  IDATA-1    ;SIGN FOR PARAMETER       FILE 20
FFDC            IPSGN  EQU  ICSGN-1    ;PARAMETER SIGN           FILE 20
FFDB            PARM1  EQU  IPSGN-1    ;ESCAPE SEQUENCE PARAMETERS FILE 20
FFDA            PARM2  EQU  PARM1-1         ;.                   FILE 20
FFD9            PARM3  EQU  PARM2-1         ;.                   FILE 20
FFD8            PARM4  EQU  PARM3-1         ;.                   FILE 20
FFD7            PARM5  EQU  PARM4-1         ;.                   FILE 20
FFD5            PARM6  EQU  PARM5-2         ;.                   FILE 20
FFD4            RADIX  EQU  PARM6-1    ;RADIX OF PARAMETERS      FILE 20
FFD2            RNGTA  EQU  RADIX-2    ;CHAR FUNCTION TABLE ADDRESS FILE 20
FFD1            ECFLG  EQU  RNGTA-1    ;ESCAPE SEQUENCE FLAG     FILE 20
                ;                        = 0, NOT IN ESCAPE SEQ  FILE 20
```

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                                                                          FILE 20
                                                                          FILE 20
                                                                          FILE 20
                                                                          FILE 20
                                                                          FILE 20
                ;                         # 0, ESC SEQ IN PROGRESS        FILE 20
FFD0            RTTMR   EQU   ECFLG-1   ;SOFT RESET TIMER                 FILE 20
                ; * * * * * * * * * * * * * * * * * * * * * * * * * *    FILE 20
                ;  END OF COMMON EQUATES                              *   FILE 20
                ; * * * * * * * * * * * * * * * * * * * * * * * * * *    FILE 20
                ;                                                         FILE 20
                ;*******************************                          FILE 20
                ; KEYBOARD ENTRY VECTOR POINTERS *                        FILE 20
                ;*******************************                          FILE 20
7000            ZBBAS   EQU   70000Q     ;KEYBOARD START ADDRESS          FILE 20
                ;                             28 K                        FILE 20
                ;                                                         FILE 20
7002            ZNIKB   EQU   ZBBAS+2   ;INITIALIZE KEYBOARD              FILE 20
7005            ZETKY   EQU   ZNIKB+3   ;GET KEYBOARD KEY                 FILE 20
7008            ZBCTL   EQU   ZETKY+3   ;PERFORM KEYBOARD CONTROL         FILE 20
700B            ZBMON   EQU   ZBCTL+3   ;MONITOR KEYBOARD                 FILE 20
700E            ZTMD1   EQU   ZBMON+3   ;SET MODE 1 FLAGS                 FILE 20
7011            ZLMD1   EQU   ZTMD1+3   ;CLEAR MODE 1 FLAGS               FILE 20
7014            ZBELL   EQU   ZLMD1+3   ;SOUND THE BELL                   FILE 20
7017            ZTXMT   EQU   ZBELL+3   ;TURN ON TRANSMIT LED             FILE 20
701A            ZLXMT   EQU   ZTXMT+3   ;TURN OFF TRANSMIT LED            FILE 20
701D            ZTJPR   EQU   ZLXMT+3   ;SET JUMPERS ESC SEQ ROUTINE      FILE 20
7020            ZTLKY   EQU   ZTJPR+3   ;SET LATCHING KEYS ROUTINE        FILE 20
7023            ZLPCK   EQU   ZTLKY+3   ;ALPHA KEY ENTRY CHECK            FILE 20
7026            ZUMCK   EQU   ZLPCK+3   ;NUMERIC KEY ENTRY CHECK          FILE 20
                ;                                                         FILE 20
                ;  KEYBOARD CONSTANTS                                     FILE 20
                ;                                                         FILE 20
7029            FSALT   EQU   ZUMCK+3   ;INITIAL ALTERNATE CHAR SET       FILE 20
702A            ATOUT   EQU   FSALT+1   ;INITIAL ALTERNATE CHAR OUT       FILE 20
                ;                                                         FILE 20
                ;  KEYBOARD CONTROL CALLS                                 FILE 20
                ;                                                         FILE 20
0001            LCKKB   EQU   1          ;LOCK KEYBOARD                   FILE 20
0002            ULKKB   EQU   2          ;UNLOCK KEYBOARD                 FILE 20
0003            RTKEY   EQU   3          ;REPEAT LAST KEY HIT             FILE 20
0004            SBLMD   EQU   4          ;SET PERMANENT BLOCK MODE        FILE 20
0005            SRTST   EQU   5          ;START SELF-TEST                 FILE 20
0006            EDTST   EQU   6          ;END SELF-TEST                   FILE 20
0007            RETKB   EQU   7          ;RESET KEYBOARD                  FILE 20
0008            CIOKY   EQU   8          ;CHECK FOR I/O CONTROL KEY       FILE 20
0009            SPRPT   EQU   9          ;STOP KEY REPEAT                 FILE 20
000A            CBRKY   EQU   10         ;CHECK FOR BREAK KEY DOWN        FILE 20
000B            SCHAR   EQU   11         ;SWITCH CHARACTER SET            FILE 20
000C            STFRN   EQU   12         ;UPDATE FOREIGN MODE             FILE 20
000D            SCHST   EQU   13         ;SET FOREIGN OUTPUT MODE         FILE 20
000E            FNMD1   EQU   14         ;SET FOREIGN MODE 1              FILE 20
000F            FNMD2   EQU   15         ;SET FOREIGN MODE 2              FILE 20
                ;                                                         FILE 20
                ;                                                         FILE 20
                ;      KEYBOARD  SLOW  RAM  EQUATES                       FILE 20
                ;                                                         FILE 20
FF20            KSRAM   EQU   177440Q   ;UPPER LIMIT OF SLOW RAM          FILE 20
FF12            KBUF2   EQU   KSRAM-14  ;AKT.KEYS STATE TABLE             FILE 20
FF12            KCTSH   EQU   KBUF2     ;SHIFT KEYS                       FILE 20
0001            LFFKY   EQU   1Q        ;FIX SHIFT LEFT                   FILE 20
0008            LHFKY   EQU   10Q       ;LEFT SHIFT                       FILE 20
0010            RHFKY   EQU   20Q       ;RIGHT SHIFT                      FILE 20
0004            LF1KY   EQU   4Q        ;LEFT SHIFT 1                     FILE 20
0002            LF2KY   EQU   2Q        ;LEFT SHIFT 2                     FILE 20
```

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                ;
                ;
                ;**********************************************
                ;
                ;        DATACOM CONSTANTS
                ;
                ;**********************************************
 7800           ZCBAS   EQU  74000Q     ;DATACOM START ADDRESS
                ;                                 30 K
                ;
 7802           TIGGR   EQU  ZCBAS+2    ;BLOCK TRANSFER TRIGGER
 7803           RCSEP   EQU  TIGGR+1    ;RECORD SEPARATOR CHARACTER
 7804           BKTRM   EQU  RCSEP+1    ;BLOCK TERMINATOR CHARACTER
 7805           DJMSK   EQU  BKTRM+1    ;DATA COMM JUMPER MASK
 7806           DJMS2   EQU  DJMSK+1    ;DATA COMM JUMPER MASK #2
                ;**********************************************
                ;
                ;        DATACOM ENTRY VECTOR POINTERS
                ;
                ;**********************************************
 7808           ZNIDC   EQU  ZCBAS+10Q     ;INITIALIZE DATACOM
 780B           ZN2DC   EQU  ZNIDC+3    ;INITIALIZATION CONTINUATOR
 780E           ZCMON   EQU  ZN2DC+3    ;MONITORING ROUTINE
 7811           ZCCTL   EQU  ZCMON+3    ;MISC CONTROL FUNCTIONS
 7814           ZCTST   EQU  ZCCTL+3    ;SELF-TEST
 7817           ZETDC   EQU  ZCTST+3    ;GET DC CHARACTER
 781A           ZUTDC   EQU  ZETDC+3    ;PUT DC CHARACTER
 781D           ZGBIN   EQU  ZUTDC+3    ;GET BINARY DC CHARACTER
 7820           ZTBIN   EQU  ZGBIN+3    ;START BINARY OUTPUT
 7823           ZDBIN   EQU  ZTBIN+3    ;END BINARY OUTPUT
 7826           ZCINT   EQU  ZDBIN+3    ;DATACOM INTERRUPTS
                ;**********************************************
                ;
                ;        DATACOM CONTROL CALL CODES
                ;
                ;**********************************************
 0000           CRTRG   EQU  0          ;CLEAR BLOCK TRANSFER TRIGGE
 0001           STTRG   EQU  1          ;SET BLOCK TRANSFER TRIGGER
 0002           RETDC   EQU  2          ;RESET DATACOM
 0003           STREM   EQU  3          ;SET REMOTE MODE
 0004           STLCL   EQU  4          ;SET LOCAL MODE
 0005           PTBRK   EQU  5          ;OUTPUT BREAK SIGNAL
 0006           DSCNT   EQU  6          ;MODEM DISCONNECT
 0007           EDBLK   EQU  7          ;TERMINATE OUTPUT MESSAGE
 0008           STMON   EQU  8          ;ENTER MONITOR MODE
 0009           STNRM   EQU  9          ;ENTER NORMAL MODE
 000A           FTBIN   EQU  10         ;ENTER FAST BINARY OUT MODE
 000B           SDATN   EQU  11         ;SEND ATTENTION CODE
 000C           SDFCT   EQU  12         ;SEND FUNCTION DATA
 000D           POMPT   EQU  13         ;SEND PROMPT CODE
                ;
                ;************************
                ; ASCII CHARACTER EQUATES *
                ;************************
 0000           NULL    EQU  0Q         ;NULL
 000A           LF      EQU  12Q        ;LINE FEED
 000C           FF      EQU  14Q        ;FORM FEED
 000D           CR      EQU  15Q        ;RETURN
 000E           SO      EQU 016Q
 000F           SI      EQU 017Q
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                                                                      FILE 20
                                                                      FILE 20
                                                                      FILE 20
                                                                      FILE 20
                                                                      FILE 20
0012            DC2     EQU  22Q        ;DEVICE CONTROL 2             FILE 20
0013            DC3     EQU  23Q        ;DEVICE CONTROL 3             FILE 20
001B            ESC     EQU  33Q        ;ESCAPE                       FILE 20
0020            CLLIM   EQU  40Q        ;CONTROL CODE UPPER LIMIT     FILE 20
0020            ABLNK   EQU 040Q       ;ASCII BLANK                   FILE 20
0026            APSND   EQU  46Q        ;(&) - AMPERSAND              FILE 20
0027            QUOTE   EQU  47Q        ;(') - SINGLE QUOTE           FILE 20
0029            APARN   EQU  51Q        ; )  - RIGHT PARENTHESIS      FILE 20
002B            PLUS    EQU  53Q        ;PLUS SIGN                    FILE 20
002C            COMMA   EQU  54Q        ;COMMA                        FILE 20
002D            MINUS   EQU  55Q        ;MINUS SIGN                   FILE 20
002E            PRIOD   EQU  56Q        ;(.) - PERIOD                 FILE 20
002F            SLANT   EQU  57Q        ;(/) - SLANT                  FILE 20
0030            ZERO    EQU  60Q        ;ASCII ZERO                   FILE 20
0032            TWO     EQU  62Q        ;ASCII TWO                    FILE 20
0033            THREE   EQU  63Q        ;ASCII THREE                  FILE 20
0034            FOUR    EQU  64Q        ;ASCII FOUR                   FILE 20
0035            FIVE    EQU  65Q        ;ASCII FIVE                   FILE 20
0036            SIX     EQU  66Q        ;ASCII SIX                    FILE 20
0037            SEVEN   EQU  67Q        ;ASCII SEVEN                  FILE 20
                ;                                                     FILE 20
0040            ASIGN   EQU  100Q       ;"AT" SIGN (@)                FILE 20
0041            AX      EQU  101Q       ;UPPER CASE A                 FILE 20
0043            CX      EQU  103Q       ;UPPER CASE C                 FILE 20
0044            DX      EQU  104Q       ;UPPER CASE D                 FILE 20
0046            FX      EQU  106Q       ;UPPER CASE F                 FILE 20
0048            HX      EQU  110Q       ;UPPER CASE H                 FILE 20
004C            LX      EQU  114Q       ;UPPER CASE L                 FILE 20
004E            NX      EQU  116Q       ;UPPER CASE N                 FILE 20
0050            PX      EQU  120Q       ;UPPER CASE P                 FILE 20
0052            RX      EQU  122Q       ;UPPER CASE R                 FILE 20
0053            SX      EQU  123Q       ;UPPER CASE S                 FILE 20
0054            TX      EQU  124Q       ;UPPER CASE T                 FILE 20
0055            UX      EQU  125Q       ;UPPER CASE U                 FILE 20
0059            YX      EQU  131Q       ;UPPER CASE Y                 FILE 20
005A            ZX      EQU  132Q       ;UPPER CASE Z                 FILE 20
005B            LTBKT   EQU  133Q       ;LEFT BRACKET                 FILE 20
005C            ACKSL   EQU  134Q       ;(*) - BACK SLANT             FILE 20
                ;                                                     FILE 20
                ;*********************                                FILE 20
                ; LOWER CASE EQUATES *                                FILE 20
                ;*********************                                FILE 20
0061            SALLA   EQU  141Q       ;LOWER CASE A                 FILE 20
0063            ALCC    EQU 143Q       ;ASCII LOWER CASE C            FILE 20
0064            SALLD   EQU  144Q       ;LOWER CASE D                 FILE 20
0066            SALLF   EQU  146Q       ;LOWER CASE F                 FILE 20
0069            SALLI   EQU  151Q       ;LOWER CASE I                 FILE 20
006B            SALLK   EQU  153Q       ;LOWER CASE K                 FILE 20
0070            SALLP   EQU  160Q       ;LOWER CASE P                 FILE 20
0078            SALLX   EQU  170Q       ;LOWER CASE X                 FILE 20
007B            LTBRC   EQU  173Q       ;LEFT BRACE                   FILE 20
007C            VTBAR   EQU  174Q       ;VERTICAL BAR                 FILE 20
007F            ADEL    EQU  177Q       ;DELETE (RUBOUT)              FILE 20
                ;                                                     FILE 20
                ;****************************************             FILE 20
00F0            YOF0    EQU  360Q                                     FILE 20
000F            Y00F    EQU  17Q                                      FILE 20
00A0            Y0A0    EQU  240Q                                     FILE 20
0080            Y080    EQU  200Q                                     FILE 20
                ;                                                     FILE 20
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                                                                        FILE 20
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                                                                        FILE 20
                                                                        FILE 20
                ;***********************                                 FILE 20
                ; DISPLAY FLAGS EQUATES *                                FILE 20
                ;***********************                                 FILE 20
  00BF          EHLIM  EQU  277Q        ;MAXIMUM ENHANCEMENT CODE        FILE 20
  00C0          STPR   EQU  300Q        ;START PROTECTED FIELD           FILE 20
  00C1          ENDPR  EQU  301Q        ;END PROTECTED FIELD             FILE 20
  00C2          XONLY  EQU  302Q        ;START TRANSMIT-ONLY FIELD       FILE 20
  00C3          FILL   EQU  303Q        ;EOL FILL CHARACTER              FILE 20
  00C4          SPFLG  EQU  304Q        ;NON-DISPLAYING TERMINATOR       FILE 20
  00C5          ALPHA  EQU  305Q        ;ALPHABETIC ONLY                 FILE 20
  00C6          NMBER  EQU  306Q        ;NUMERIC ONLY                    FILE 20
  00C7          APHNM  EQU  307Q        ;ALPHANUMERIC FIELD              FILE 20
  00C8          SKYAT  EQU  310Q        ;SOFT KEY ATTRIBUTE FIELD        FILE 20
                ;                                                        FILE 20
  00C4          FDSEP  EQU  304Q        ;FIELD SEPARATOR FOR I/O BUF     FILE 20
  00CC          EOL    EQU 314Q                                          FILE 20
  00CE          EOP    EQU 316Q                                          FILE 20
  00D0          LKLIM  EQU 320Q      ;LOWEST VALUE FOR A LINK            FILE 20
  0800          NUM2K  EQU  4000Q       ;NUMBER 2048 (2K)                FILE 20
  8000          B15    EQU  100000Q     ;BIT 15                          FILE 20
  00C3          IJMP   EQU  303Q        ;JUMP INSTRUCTION CODE           FILE 20
  00C9          IRET   EQU  311Q        ;RETURN INSTRUCTION CODE         FILE 20
                ;***********************                                 FILE 20
                ; MISCELLANEOUS EQUATES *                                FILE 20
                ;***********************                                 FILE 20
  0017          MXROW  EQU  23          ;MAXIMUM ROW NUMBER              FILE 20
  004F          MXCOL  EQU  79          ;MAXIMUM COLUMN NUMBER           FILE 20
  0010          STEND  EQU  16          ;LAST SOFT KEY DEFINITION RO     FILE 20
  0051          BLLIM  EQU  81          ;SPACE FROM RHTMGN FOR BELL      FILE 20
  000F          BLKSM  EQU  17Q         ;BLOCK SIZE MASK                 FILE 20
  0010          BLKSZ  EQU  16          ;BLOCK SIZE                      FILE 20
  0020          IERRB  EQU  40Q         ;I/O ERROR STATUS BIT            FILE 20
  0001          RXMIT  EQU  1Q          ;RE-TRANSMIT I/O FLAG            FILE 20
  0002          BNXMT  EQU  2           ;SEND BINARY DATA                FILE 20
  0032          STDLY  EQU  50          ;SOFT RESET PERIOD - .50 SEC     FILE 20
  0080          NSIGN  EQU  200Q        ;NO SIGN FLAG FOR INPUT DATA     FILE 20
                ;                                                        FILE 20
                ;********************                                    FILE 20
                ; I/O MODULE EQUATES *                                   FILE 20
                ;********************                                    FILE 20
  0000          RESET  EQU  0Q          ;RESET TERMINAL VECTOR           FILE 20
  0001          RTJMP  EQU  1Q          ;VECTOR FOR RESTART "PCHL"       FILE 20
  0070          POCSR  EQU  160Q        ;PROCESSOR "OUT" PORT            FILE 20
  0080          IBASE  EQU 200Q      ;I/O ADDRESS MSB'S                  FILE 20
                ;                                                        FILE 20
                ;  KEYBOARD                                              FILE 20
                ;                                                        FILE 20
  8003          IOKB   EQU  3Q+IBASE*256   ;MODULE 11 BASE ADDRESS       FILE 20
  8083          IKBCO  EQU  IOKB+200Q ;RESET KEY CONTROL                 FILE 20
  0002          RSTON  EQU  2Q          ;RESET ON                        FILE 20
  0004          RTOFF  EQU  4Q          ;RESET OFF                       FILE 20
  0008          NFCTK  EQU  8           ;NUMBER OF FUNCTION KEYS         FILE 20
                ;                                                        FILE 20
                ;  CURSOR CONTROL                                        FILE 20
                ;                                                        FILE 20
  8007          IDISP  EQU  7Q+IBASE*256   ;MODULE 13 BASE ADDRESS       FILE 20
  8007          ICRCL  EQU  IDISP+0   ;CURSOR COLUMN ADDRESS             FILE 20
  8027          ICRRW  EQU  IDISP+40Q   ;CURSOR ROW ADDRESS              FILE 20
  0020          MYEOP  EQU  40Q         ;DMA ON, EOP IF DMA ROW = RO     FILE 20
  0040          MYEOL  EQU  100Q        ;DMA OFF, SKIP EOP IF ROWS =     FILE 20
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                                                                                FILE 20
8080 MACRO ASSEMBLER, VER 2.4            ERRORS = 0 PAGE 8                      FILE 20
                                                                                FILE 20
                                                                                FILE 20
                                                                                FILE 20
  0060          DAOFF  EQU  140Q        ;DMA OFF                                FILE 20
  0080          CTOFF  EQU  200Q        ;DISPLAY OFF                            FILE 20
  0082          INVRS  EQU  202Q        ;INVERSE VIDEO ON                       FILE 20
  0080          NRMAL  EQU  200Q        ;NORMAL VIDEO ON                        FILE 20
                ;                                                               FILE 20
                ;  CARTRIDGE TAPE                                               FILE 20
                ;                                                               FILE 20
  800B          IOCTU  EQU  13Q+IBASE*256   ;MODULE 15 BASE ADDRES              FILE 20
  800B          ICTCO  EQU  IOCTU+0Q  ;COMMAND TO CTU                           FILE 20
  800B          ICTSI  EQU  IOCTU+0Q  ;STATUS FROM CTU                          FILE 20
  802B          ICTDO  EQU  IOCTU+40Q  ;DATA TO CTU                             FILE 20
  802B          ICTDI  EQU  IOCTU+40Q  ;DATA FROM CTU                           FILE 20
                ;                                                               FILE 20
                ;                                                               FILE 20
                ;  9866 PRINTER                                                 FILE 20
                ;                                                               FILE 20
  800D          IPTR1  EQU  15Q+IBASE*256   ;MODULE 16 BASE ADDRES              FILE 20
  802D          PTOT1  EQU  IPTR1+40Q   ;PRINTER DATA OUT                       FILE 20
  800D          PRST1  EQU  IPTR1+0Q    ;PRINTER STATUS IN                      FILE 20
  800F          PRCL1  EQU  IPTR1+2Q    ;PRINTER CLEAR                          FILE 20
                ;                                                               FILE 20
                ;  RS-232 PRINTER                                               FILE 20
                ;                                                               FILE 20
  8005          IPTR2  EQU  5Q+IBASE*256    ;MODULE 12 BASE ADDRESS             FILE 20
  8045          PTOT2  EQU  IPTR2+100Q    ;INTERFACE CONTROL OUT                FILE 20
  8025          PRST2  EQU  IPTR2+40Q   ;PRINTER STATUS IN                      FILE 20
  8065          PRDA2  EQU  IPTR2+140Q    ;PRINTER DATA OUT                     FILE 20
  8045          PRCF2  EQU  IPTR2+100Q    ;OPTION JUMPERS IN                    FILE 20
                ;                                                               FILE 20
                ;*****************                                               FILE 20
                ; PRINTER EQUATES *                                              FILE 20
                ;*****************                                               FILE 20
                ;                                                               FILE 20
                ;  RS-232 OPTION STRAPS                                         FILE 20
                ;                                                               FILE 20
                ;     BITS 2-0    MEANING IF SET                                FILE 20
                ;     000         EXT BAUD RATE                                 FILE 20
                ;     001          110  "                                       FILE 20
                ;     010          150  "                                       FILE 20
                ;     011          300  "                                       FILE 20
                ;     100         1200  "                                       FILE 20
                ;     101         2400  "                                       FILE 20
                ;     110         4800  "                                       FILE 20
                ;     111         9600  "                                       FILE 20
                ;                                                               FILE 20
                ;     BIT 3       PARITY SELECT                                 FILE 20
                ;       1         EVEN                                          FILE 20
                ;       0         ODD                                           FILE 20
                ;                                                               FILE 20
                ;     BIT 4       PARITY INHIBIT                                FILE 20
                ;       1         NO PARITY                                     FILE 20
                ;       0         PARITY                                        FILE 20
                ;     BITS 7-5    # OF FILLS                                    FILE 20
                ;     000         HANDSHAKE DEVICE                              FILE 20
                ;     001         8                                             FILE 20
                ;     010         16                                            FILE 20
                ;     011         24                                            FILE 20
                ;     100         32                                            FILE 20
                ;     101         40                                            FILE 20
                ;     110         48                                            FILE 20
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                    ;     111        56                              FILE 20
                    ;*****************                               FILE 20
                    ; DRIVER EQUATES *                               FILE 20
                    ;*****************                               FILE 20
 05DC               PTDLY  EQU  1500      ;15 SECOND PRINTER TIME OUT FILE 20
                    ;**********************                          FILE 20
                    ; 9866 PRINTER EQUATES *                         FILE 20
                    ;**********************                          FILE 20
 0001               PRDY1  EQU 1          ;PRINTER READY             FILE 20
 0080               PRPO1  EQU 200Q       ;PRINTER OUT OF PAPER      FILE 20
                    ;************************                        FILE 20
                    ; RS-232 PRINTER EQUATES *                       FILE 20
                    ;************************                        FILE 20
 0002               PRDY2  EQU 2          ;PRINTER READY MASK        FILE 20
 0040               PRSB2  EQU 100Q       ;RS-232 SB LINE STROBE     FILE 20
 0020               PROL2  EQU 40Q        ;PRINTER READY MASK        FILE 20
 00E0               PRHD2  EQU 340Q       ;RS-232 HANDSHAKE PROTOCOL FILE 20
 001F               PRBD2  EQU 37Q        ;PARITY AND BAUD RATE MASK FILE 20
                    ;                                                FILE 20
                    ;****************************                    FILE 20
                    ; VARIABLE SPACE ALLOCATION *                    FILE 20
                    ;****************************                    FILE 20
 FAFF               DPLIM  EQU  175377Q   ;DISPLAY UPPER LIMIT       FILE 20
 00D0               LWDSP  EQU  150000Q/256  ;DISPLAY LOWER LIMIT    FILE 20
 FB00               YDBUF  EQU  175400Q                              FILE 20
 FC00               IOBUF  EQU  176000Q                              FILE 20
 00FC               IBUFH  EQU  IOBUF/256                            FILE 20
 0000               IBUFL  EQU  0             ;-IBUFH*256+IOBUF      FILE 20
 FC00               IBUF1  EQU  176000Q                              FILE 20
 FD00               IBUF2  EQU  176400Q                              FILE 20
 FE4F               DPSTR  EQU  177000Q+79  ;MESSAGE BUFFER          FILE 20
 0100               PRBLN  EQU  256       ;PRINTER INPUT BUFFER SIZE FILE 20
                    ;***************************                     FILE 20
                    ; OPERATING SYSTEM STORAGE *                     FILE 20
                    ;***************************                     FILE 20
 9160               STACK  EQU  FTRAM+140Q   ;STACK AREA (96 BYTES)  FILE 20
 FFD0               OSTOR  EQU  177720Q   ;VARIABLES STORAGE AREA    FILE 20
 00FF               BASEH  EQU  OSTOR/256    ;MSB OF DATA PAGE ADDRESSE FILE 20
 FF00               BASE   EQU  BASEH*256 ;DATA PAGE BASE ADDRESS    FILE 20
 00FE               BSEH2  EQU  BASEH-1   ;BASE VALUES FOR SECOND PAGE FILE 20
 FE00               BASE2  EQU  BSEH2*256    ;OF VARIABLES SPACE     FILE 20
                    ;***************************                     FILE 20
                    ; VARIABLE SUBROUTINE CALL *                     FILE 20
                    ;***************************                     FILE 20
 FFCD               EONTF  EQU OSTOR-3  ;JUMP SUBROUTINE             FILE 20
 FFCE               CTFAD  EQU  EONTF+1   ;CHARACTER FUNCTION ADDRESS FILE 20
                    ;                                                FILE 20
                    ;*******************************************     FILE 20
                    ; NORMAL/SOFT KEY SWAPPED DISPLAY PARAMETERS *    FILE 20
                    ;*******************************************     FILE 20
 FFCB               TPLIN  EQU  EONTF-2   ;LSB PART OF NEXT LINE     FILE 20
                    ;                       POINTER IN TOP DISPLAY   FILE 20
                    ;                       LINE                     FILE 20
 FFC9               LTLIN  EQU  TPLIN-2   ;POINTER TO LSB PART OF    FILE 20
                    ;                       NEXT LINE POINTER IN     FILE 20
                    ;                       LAST LINE PROCESSED      FILE 20
 FFC8               LTCOL  EQU  LTLIN-1   ;COLUMN AND ROW POSITION OF FILE 20
 FFC7               LTROW  EQU  LTCOL-1     ;LAST CHARACTER PROCESSED FILE 20
                    ;                       (CORRESPONDS TO CHARACTER FILE 20
                    ;                          GIVEN BY "CURADR")    FILE 20
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                                                                                   FILE 20
8080 MACRO ASSEMBLER, VER 2.4           ERRORS = 0 PAGE 10                         FILE 20
                                                                                   FILE 20
                                                                                   FILE 20
                                                                                   FILE 20
  FFC6          LTDCD   EQU   LTROW-1    ;LAST DISPLAY CODE USED                   FILE 20
  FFC5          LTFMT   EQU   LTDCD-1    ;LAST FORMAT CONTROL USED                 FILE 20
  FFC3          CRADR   EQU   LTFMT-2    ;ADDRESS OF LAST CHARACTER                FILE 20
                ;                          PROCESSED                              FILE 20
  FFC2          POFLD   EQU   CRADR-1    ;PROTECT STATE OF (CURADR)                FILE 20
                                           = -1, PROTECTED                        FILE 20
                ;                          # -1, NOT PROTECTED                    FILE 20
                ;***********************                                           FILE 20
                ; CURRENT CURSOR VALUES *                                          FILE 20
                ;***********************                                           FILE 20
  FFC1          CRCOL   EQU   POFLD-1    ;CURRENT COLUMN AND ROW                   FILE 20
  FFC0          CRROW   EQU   CRCOL-1      ;POSITION OF CURSOR                     FILE 20
  FFBF          LTMGN   EQU   CRROW-1    ;LEFT MARGIN SETTING                      FILE 20
  FFBE          RTMGN   EQU   LTMGN-1    ;RIGHT MARGIN SETTING                     FILE 20
  000F          NMSWP   EQU   EONTF-RTMGN     ;# OF SWAP VARIABLES                 FILE 20
  FFAF          SPSTR   EQU   RTMGN-NMSWP     ;SWAP BUFFER                         FILE 20
  FFAE          DPTYP   EQU   SPSTR-1    ;DISPLAY CURRENTLY ENABLED                FILE 20
                ;                          0 = NORMAL DISPLAY                     FILE 20
                ;                         -1 = SOFT KEY DISPLAY                   FILE 20
                ;****************************************                          FILE 20
                ; FIXED DISPLAY PARAMETERS (NOT SWAPPED) *                         FILE 20
                ;****************************************                          FILE 20
  FFAC          FBLKS   EQU   DPTYP-2    ;FREE BLOCKS LIST HEAD                    FILE 20
  FFAA          DPBGN   EQU   FBLKS-2    ;LOW ADDRESS OF DISPLAY AREA              FILE 20
  FFA8          DPEND   EQU   DPBGN-2    ;HIGH ADDR OF DISPLAY AREA                FILE 20
  FFA6          STKYS   EQU   DPEND-2    ;SOFT KEY DISPLAY START ADDR              FILE 20
  FFA4          CRFKY   EQU   STKYS-2    ;CURRENT FUNCTION KEY CHAR                FILE 20
  FFA3          TLINO   EQU   CRFKY-1    ;TOP LINE ABSOLUTE ROW NUMBE              FILE 20
  FFA1          LLINE   EQU   TLINO-2    ;LAST DISPLAY LINE START ADD              FILE 20
  FF9F          FLINE   EQU   LLINE-2    ;POINTER TO LSB PART OF NEXT              FILE 20
                ;                          LINE POINTER IN FIRST                  FILE 20
                ;                          LINE OF NORMAL DISPLAY                 FILE 20
                ;                                                                  FILE 20
                ;*******************                                               FILE 20
                ; SCRATCH VARIABLES *                                              FILE 20
                ;*******************                                               FILE 20
  FF9E          TEMP1   EQU   FLINE-1                                              FILE 20
  FF9D          TEMP    EQU   TEMP1-1    ;TEMPORARY STORAGE                        FILE 20
  FF9C          CARIN   EQU   TEMP-1     ;CHARACTER FROM KEYBOARD                  FILE 20
  FF9B          NCHAR   EQU   CARIN-1    ;NUMBER OF CHARS TO BE ADDED              FILE 20
  FF9A          NROWS   EQU NCHAR-1  ;NO. OF ROWS TO BE ADDED                      FILE 20
  FF99          NBLKS   EQU NROWS-1  ;NO. OF BLOCKS TO BE ADDED                    FILE 20
  FF98          CHSAV   EQU NBLKS-1  ;SAVE AREA FOR CHAR                           FILE 20
                ;                     PRECEDING LINK                              FILE 20
  FF96          LKSAV   EQU CHSAV-2  ;LINK SAVE AREA                               FILE 20
  FF94          ELADR   EQU LKSAV-2  ;ADDR OF LAST EOL                             FILE 20
  FF92          FSTBL   EQU ELADR-2  ;FIRST BLOCK IN DISPL1                        FILE 20
  FF91          BKFIL   EQU FSTBL-1  ;FILL FLAG FOR FNDCHR                         FILE 20
  FF90          EOLMV   EQU BKFIL-1  ;FLAG FOR EOLMOV                              FILE 20
  FF8F          FLCHR   EQU EOLMV-1  ;FILL CHAR SAVE FOR GTBLK                     FILE 20
  CFFF          BSPCE   EQU   147777Q    ;UPPER LIMIT OF BUFFER                    FILE 20
  00B0          LWBUF   EQU   130000Q/256  ;LOWER LIMIT                            FILE 20
  FF8D          BFBGN   EQU   FLCHR-2    ;LOW ADDR OF NON-DISPLY BUFF              FILE 20
  FF8B          BFEND   EQU   BFBGN-2    ;HIGH ADDR FOR BUFFER                     FILE 20
                ;***************************************                           FILE 20
                ;  STORAGE FOR CHARACTERS TO BE STORED  *                          FILE 20
                ;***************************************                           FILE 20
  FF8A          FTCTL   EQU   BFEND-1    ;FORMAT CONTROL TO BE ENTERE              FILE 20
  FF89          DCHAR   EQU   FTCTL-1    ;NEXT CHAR TO BE DISPLAYED                FILE 20
  FF88          CHAR    EQU   DCHAR-1    ;CURRENT CHAR BEING PROCESSE              FILE 20
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                                                                          FILE 20
                                                                          FILE 20
                                                                          FILE 20
                                                                          FILE 20
                                                                          FILE 20
 FF86            CKRTN   EQU  CHAR-2     ;CURRENT TYPE CHECK ROUTINE      FILE 20
 FF85            TPCOL   EQU  CKRTN-1    ;COLUMN # STORAGE FOR RCADDR     FILE 20
                 ;*********************************                       FILE 20
                 ; STORAGE FOR CURSOR POSITIONING *                       FILE 20
                 ;*********************************                       FILE 20
 FF84            COUNT   EQU  TPCOL-1    ;NUMBER OF BYTES TO FILL         FILE 20
 FF83            NROLL   EQU  COUNT-1    ;NUMBER OF LINES TO ROLL         FILE 20
 FF82            RLLCT   EQU  NROLL-1    ;ROLL COUNTER                    FILE 20
                 ;                                                        FILE 20
 FFDB            NWCOL   EQU  PARM1      ;NEW COLUMN NUMBER               FILE 20
 FFDA            NWROW   EQU  PARM2      ;NEW ABSOLUTE ROW NUMBER         FILE 20
 FFD9            SRNRW   EQU  PARM3      ;NEW SCREEN ROW SETTING          FILE 20
                 ;                                                        FILE 20
                 ;**********************                                  FILE 20
                 ; HORIZONTAL TAB TABLE *                                 FILE 20
                 ;**********************                                  FILE 20
 000A            HBLEN   EQU  10         ;TABLE LENGTH (= 10 X 8)         FILE 20
 FF78            HBTBL   EQU  RLLCT-HBLEN                                 FILE 20
                 ;**********************                                  FILE 20
                 ; DISPLAY SEND STORAGE *                                 FILE 20
                 ;**********************                                  FILE 20
 FF77            CSPEN   EQU HBTBL-1  ;CURRENT ENHANCEMENT IN             FILE 20
 FF76            EHOUT   EQU CSPEN-1  ;LAST ENHANCEMENT OUT               FILE 20
 FF75            CLTST   EQU EHOUT-1  ;CURRENT ALTERNATE SET OUT          FILE 20
 FF73            GTADR   EQU  CLTST-2    ;CURRENT CHARACTER ADDRESS       FILE 20
                 ;**************************                              FILE 20
                 ; FLAGS AND TABLE POINTERS *                             FILE 20
                 ;**************************                              FILE 20
 FF72            CRSET   EQU  GTADR-1    ;CURRENT ALTERNATE CHAR SET      FILE 20
 FF71            KFCTK   EQU  CRSET-1    ;KEYBOARD FUNCTION CODE          FILE 20
                 ;*********************************************          FILE 20
 FF70            MFLGS   EQU  KFCTK-1    ;BLOCK TRANSFER PENDING FLAG     FILE 20
                 ;*********************************************          FILE 20
 0100            SDC2    EQU  1Q*256     ;DC2 PENDING                     FILE 20
 0200            SSTAT   EQU  2Q*256     ;TERMINAL STATUS PENDING         FILE 20
 0400            STAT2   EQU  4Q*256     ;TERMINAL STATUS 2 PENDING       FILE 20
 0800            SDVST   EQU  10Q*256    ;DEVICE STATUS PENDING           FILE 20
 1000            SRSEN   EQU  20Q*256    ;CURSOR SENSE PENDING            FILE 20
 2000            SCTKY   EQU  40Q*256    ;FUNCTION KEY PENDING            FILE 20
 4000            SNTER   EQU  100Q*256   ;DISPLAY SEND PENDING            FILE 20
 8000            SVDUN   EQU  200Q*256   ;DEVICE DONE PENDING             FILE 20
                 ;************************************                    FILE 20
 FF6F            MLGS2   EQU  MFLGS-1    ;MAIN CODE MODE FLAGS            FILE 20
                 ;************************************                    FILE 20
 0001            SVREC   EQU  1Q         ;DEVICE RECORD PENDING           FILE 20
 0002            SINRY   EQU  2Q         ;BINARY RECORD PENDING           FILE 20
 0004            RLSNS   EQU  4Q         ;RELATIVE CURSOR SENSE           FILE 20
 0008            ECINP   EQU 10Q       ;ESC RECEIVED IN BLOCK MODE        FILE 20
 0010            FSOUT   EQU  20Q        ;FIRST SOFT KEY DATA OUT         FILE 20
 0020            WPDEL   EQU  40Q        ;DELETE CHAR W/ WRAP AROUND      FILE 20
 0040            WPFLG   EQU  100Q       ;LINE WRAP AROUND OCCURRED       FILE 20
 0080            NRWST   EQU  200Q       ;NEW ABSOLUTE ROW SET            FILE 20
                 ;***********************************                     FILE 20
 FF6E            DFLGS   EQU  MLGS2-1    ;DATA TRANSFER FLAGS             FILE 20
                 ;***********************************                     FILE 20
 0001            SACOM   EQU 001Q      ;DATACOM/KEYBOARD                  FILE 20
 0002            CTXFR   EQU  2Q         ;CONTINUE BUFFER TO DATA COM     FILE 20
 0004            NSEND   EQU  4Q         ;NO DISPLAY DATA TO SEND         FILE 20
 0008            SPTRM   EQU  10Q        ;SKIP BLOCK TERMINATOR           FILE 20
 0010            FTK2D   EQU  20Q        ;FUNCTION KEY TO DISPLAY         FILE 20
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                                                                 FILE 20
                                                                 FILE 20
                                                                 FILE 20
                                                                 FILE 20
                                                                 FILE 20
0040            KDLOK  EQU  100Q     ;KB LOCKED BY ESCAPE SEQUENC  FILE 20
0080            XF2DS  EQU  200Q     ;I/O BUFFER TO DISPLAY MODE   FILE 20
                ;                                                FILE 20
                ;****************************************        FILE 20
FF6D            TMFCT  EQU  DFLGS-1  ;NON-DISPLAYING TERMINATOR    FILE 20
                ;****************************************        FILE 20
FFFF            SPXFR  EQU  -1       ;TERMINATE TRANSFER           FILE 20
0000            DLTRM  EQU  0        ;DELETE TERMINATOR            FILE 20
0001            INTRM  EQU  1        ;IGNORE TERMINATOR            FILE 20
                ;************************************            FILE 20
FF6C            SPOWL  EQU  TMFCT-1  ;SPACE OVERWRITE LATCH        FILE 20
                ;************************************            FILE 20
0020            SOWON  EQU  40Q      ;SPOW LATCH ON                FILE 20
00FF            SOWOF  EQU  377Q     ;SPOW LATCH OFF               FILE 20
                ;********************************************    FILE 20
FF6B            MKROW  EQU  SPOWL-1  ;MEMORY LOCK ROW              FILE 20
FF6A            MKFLG  EQU  MKROW-1  ;MEMORY LOCK FLAG             FILE 20
FF69            LCHAR  EQU  MKFLG-1  ;LAST CHARACTER PROCESSED     FILE 20
FF68            TCHAR  EQU  LCHAR-1  ;CURRENT TEST PATTERN CHAR    FILE 20
FF67            CAFLG  EQU  TCHAR-1  ;CURSOR ADVANCE FLAG          FILE 20
                ;****************************                    FILE 20
                ; POINTERS FOR BINARY LOADER *                   FILE 20
                ;****************************                    FILE 20
FFD5            LADDR  EQU  PARM6    ;BYTE ADDRESS PARAMETER       FILE 20
FFDE            LDATA  EQU  IDATA    ;INPUT DATA ACCUMULATOR       FILE 20
FFD7            LHKSM  EQU  PARM5    ;16-BIT CHECKSUM              FILE 20
                ;                                                FILE 20
                ;V*V*V*V*V*V*V*V*V*V*V*V*V*V*V*V*V*V*V           FILE 20
                ;                                                FILE 20
                ;  CTU/IO EQUATES - 4/11/76 - 2255 HOURS         FILE 20
                ;                                                FILE 20
                ; TAPE DISTANCE MEASUREMENT                      FILE 20
                ; =======================                        FILE 20
                ;                                                FILE 20
                ; AS OF 3/1/75, .017125" OF TAPE MOTION IS       FILE 20
                ; EQUIVALENT TO 1 TACH EDGE.  THE COUNT IS       FILE 20
                ; IN ERROR WHEN STARTING OR STOPPING BY          FILE 20
                ; 1 TACH EDGE (STOPPING IN A GAP MAY CAUSE       FILE 20
                ; AN ERROR OF TWO TACH EDGES).                   FILE 20
                ;                                                FILE 20
                ;******************************                  FILE 20
FF66            CSTAT  EQU  CAFLG-1  ;CTU STATUS                   FILE 20
                ;******************************                  FILE 20
0080            TKI    EQU  200Q     ;TACH INTERRUPT               FILE 20
0040            RDY    EQU 100Q    ;BYTE READY                     FILE 20
0020            GAP    EQU 40Q                                    FILE 20
0010            HOL    EQU 20Q       ;TAPE HOLE                    FILE 20
0008            TAK    EQU 10Q       ;TACH (58.4 EDGES/IN)         FILE 20
0004            RIP    EQU 4Q        ;RECORD IN PROGRESS           FILE 20
0002            CIR    EQU  2Q       ;RIGHT CARTRIDGE INSERTED     FILE 20
0001            CIL    EQU  1Q       ;LEFT CARTRIDGE INSERTED      FILE 20
                ;*******************************                 FILE 20
FF65            IFLGS  EQU  CSTAT-1  ;I/O FLAGS 1                  FILE 20
                ;*******************************                 FILE 20
0001            RWOWT  EQU  1Q       ;READ WITHOUT WAIT MODE       FILE 20
0002            UREAD  EQU  2Q       ;READ KEY INITIATED READ      FILE 20
0004            FLRED  EQU  4Q       ;FILE READ                    FILE 20
0008            RCRWD  EQU  10Q      ;RECORD DISPLAY AND REWIND    FILE 20
                ;                     OLD OUTPUT CTU (LOGGING)   FILE 20
0010            RCINI  EQU  20Q      ;START "RECORD" MODE          FILE 20
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                                                                      FILE 20
                                                                      FILE 20
                                                                      FILE 20
                                                                      FILE 20
                                                                      FILE 20
0020        RCPGE  EQU  40Q       ;FILE COPY FROM DISPLAY -           FILE 20
            ;                       INHIBIT ROLL UP                   FILE 20
0080        VRIFY  EQU  200Q      ;"CTU2BF" PERFORMS VERIFY           FILE 20
            ;******************************                            FILE 20
FF64        IFLG2  EQU  IFLGS-1   ;I/O FLAGS 2                        FILE 20
            ;******************************                            FILE 20
0001        ETB2D  EQU  1Q        ;EXTERNAL BUFFER TO DATA COM        FILE 20
0020        XS2BF  EQU  40Q       ;TRANSFER DISPLAY TO BUFFER         FILE 20
0040        DPBTM  EQU  100Q      ;BOTTOM OF DISPLAY REACHED          FILE 20
0080        EDDSP  EQU  200Q      ;END OF DISPLAY REACHED             FILE 20
            ;                                                         FILE 20
            ;******************************                            FILE 20
FF63        UNITO  EQU  IFLG2-1   ;UNIT STATUS                        FILE 20
            ;******************************                            FILE 20
0001        LPM    EQU    1Q      ;TAPE AT OR BEFORE LOAD POIN        FILE 20
0002        LTFWD  EQU    2Q      ;TAPE LAST MOVED FORWARD            FILE 20
0004        FPS    EQU    4Q      ;TAPE WRITE PROTECTED               FILE 20
0008        CDEXC  EQU   10Q      ;SUCCESSFUL COMMAND EXECUTIO        FILE 20
0010        DLHOL  EQU   20Q      ;DOUBLE HOLE FOUND                  FILE 20
0020        BOT    EQU   40Q      ;TAPE PAST BOT HOLES                FILE 20
0040        LP     EQU  100Q      ;TAPE PAST LP HOLE                  FILE 20
0080        EW     EQU  200Q      ;TAPE PAST EW HOLE                  FILE 20
            ;*****************************************                 FILE 20
FF62        CTRLO  EQU  UNITO-1   ;DATA TRANSFER FLAGS: *             FILE 20
            ;*****************************************                 FILE 20
0001        EOF    EQU    1Q      ;END OF FILE                        FILE 20
0002        EVD    EQU    2Q      ;END OF VALID DATA                  FILE 20
0004        HDERR  EQU    4Q      ;HARD ERROR                         FILE 20
0008        STERR  EQU   10Q      ;SOFT ERROR                         FILE 20
0010        HDER1  EQU   20Q      ;INTERRUPT ERROR FLAG               FILE 20
0020        WTERR  EQU   40Q      ;WRITE ERROR                        FILE 20
0040        DTATR  EQU  100Q      ;DATA RECORDED                      FILE 20
            ;**********************************************            FILE 20
FF61        RLTAK  EQU  CTRLO-1   ;GAP LENGTH COUNTER                 FILE 20
            ;****************************************                  FILE 20
FF5F        ASTAK  EQU  RLTAK-2   ;ABSOLUTE TACH COUNTER              FILE 20
            ;****************************************                  FILE 20
405F        SRTAK  EQU  40137Q    ;STARTING VALUE                     FILE 20
            ;*************************************************         FILE 20
FF5E        FLNUM  EQU  ASTAK-1   ;CURRENT FILE NUMBER                FILE 20
FF5D        STCNT  EQU  FLNUM-1   ;SOFT ERRORS PER PASS               FILE 20
FF56        OTHER  EQU  STCNT-7   ;STORAGE FOR UNIT NOT SEL.          FILE 20
            ;*****************************************                 FILE 20
FF55        CMND   EQU  OTHER-1   ;CURRENT CTU COMMAND: *             FILE 20
            ;*****************************************                 FILE 20
0001        RUN    EQU 1Q         ;MOVE TAPE                          FILE 20
0002        FWD    EQU 2Q         ;FORWARD                            FILE 20
0004        FST    EQU 4Q         ;FAST                               FILE 20
0008        REC    EQU 10Q        ;RECORD                             FILE 20
0010        USL    EQU  20Q       ;SELECT LEFT UNIT                   FILE 20
0020        GEN    EQU 40Q        ;GAP GENERATE                       FILE 20
0040        ANR    EQU  100Q      ;LIGHT FOR RIGHT UNIT               FILE 20
0080        ANL    EQU  200Q      ;LIGHT FOR LEFT UNIT                FILE 20
            ;****************************************                  FILE 20
            ;  INPDEV, OUTDEV, BXSTAT - I/O DEVICES  *                 FILE 20
            ;****************************************                  FILE 20
0001        LTCTU  EQU    1Q      ;LEFT CARTRIDGE TAPE UNIT           FILE 20
0002        RGCTU  EQU    2Q      ;RIGHT CARTRIDGE TAPE UNIT          FILE 20
0004        DSPLY  EQU    4Q      ;DISPLAY                            FILE 20
0008        PINTR  EQU   10Q      ;PRINTER                            FILE 20
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 0010          ALTIO   EQU   20Q      ;ALTERNATE I/O                   FILE 20
 0020          DTCOM   EQU   40Q      ;DATA COMM                       FILE 20
 0080          BFBSY   EQU  200Q      ;BUF HELD BY UNSPECIFIED DEV     FILE 20
               ;                                                       FILE 20
 FF54          SNCNT   EQU  CMND-1    ;NUM. OF KBSCAN PER CTU SCAN     FILE 20
 FF53          CBLNK   EQU  SNCNT-1   ;BLINK MASK FOR EJECT LIGHTS     FILE 20
 FF52          CBLTM   EQU  CBLNK-1   ;BLINK TIMER                     FILE 20
 0020          CBDLY   EQU  40Q       ;BLINK DELAY                     FILE 20
 FF51          HLCNT   EQU  CBLTM-1   ;HOLE COUNTER                    FILE 20
 FF50          TSTAL   EQU  HLCNT-1   ;TAPE STALL COUNTER              FILE 20
               ;***************                                        FILE 20
               ; I/O VARIBLES *                                        FILE 20
               ;***************                                        FILE 20
 FF4F          ICERR   EQU  TSTAL-1   ;I/O ERROR FLAG                  FILE 20
               ;                        0 = NO ERROR                   FILE 20
               ;                       -1 = ERROR OCCURRED             FILE 20
 FF4E          IPDEV   EQU  ICERR-1   ;CURRENT INPUT DEVICE            FILE 20
 FF4D          OTDEV   EQU IPDEV-1  ;CURRENT OUTPUT DEVICE             FILE 20
 FF4C          ICDPT   EQU OTDEV-1  ;DEVICE FLAG POINTER               FILE 20
 FF4B          ISTA3   EQU  ICDPT-1   ;DEVICE STATUS BYTE 3            FILE 20
 FF4A          ISTA2   EQU  ISTA3-1   ;DEVICE STATUS BYTE 2            FILE 20
 FF49          ISTA1   EQU  ISTA2-1   ;DEVICE STATUS BYTE 1            FILE 20
 FF48          ISTA0   EQU  ISTA1-1   ;DEVICE NUMBER FOR STATUS        FILE 20
 FF47          XRLIM   EQU  ISTA0-1   ;TRANSFER LIMIT                  FILE 20
 FF46          CPLIM   EQU  XRLIM-1   ;COMPARE LIMIT                   FILE 20
 FF3D          BDBUF   EQU  CPLIM-9   ;BIN TO DECIMAL CONV BUFFER      FILE 20
 003D          BDBFL   EQU  BDBUF-BASE   ;LSB PART OF "B2DBUF"         FILE 20
 FF3C          BDPTR   EQU  BDBUF-1   ;B2DBUF "GET" POINTER (LSB)      FILE 20
 FF3B          BDEND   EQU BDPTR-1  ;B2DBUF END POINTER                FILE 20
               ;                                                       FILE 20
               ;  I/O CONTROL VARIABLES                                FILE 20
               ;                                                       FILE 20
 FFDB          ICDEV   EQU  PARM1     ;DEVICE FLAG                     FILE 20
 FFDA          ICOUT   EQU  PARM2     ;OUTPUT DEVICE ACCUMULATOR       FILE 20
 FFD9          ICINP   EQU  PARM3     ;INPUT DEVICE ACCUMULATOR        FILE 20
 FFD8          ICTYP   EQU  PARM4     ;COMMAND MODIFIER FLAG           FILE 20
 FFD7          ICMND   EQU  PARM5     ;COMMAND TYPE FLAG               FILE 20
 FFD5          ICCNT   EQU  PARM6     ;DATA COUNT (2 BYTES)            FILE 20
               ;                                                       FILE 20
               ;                                                       FILE 20
               ;  I/O BUFFER INFORMATION STORAGE                       FILE 20
               ;                                                       FILE 20
 FF3A          B1STT   EQU  BDEND-1   ;STATUS OF FIRST BUFFER          FILE 20
 FF39          B1TYP   EQU  B1STT-1   ;TYPE (-1=NORM, 0=EOF, 1=EVD     FILE 20
 FF38          B1LEN   EQU  B1TYP-1   ;LENGTH OF RECORD                FILE 20
 FF37          B2STT   EQU  B1LEN-1   ;STATUS OF SECOND BUFFER         FILE 20
 FF36          B2TYP   EQU  B2STT-1   ;TYPE (-1=NORM, 0=EOF, 1=EVD     FILE 20
 FF35          B2LEN   EQU  B2TYP-1   ;LENGTH OF RECORD                FILE 20
               ;                                                       FILE 20
               ;  STORAGE FOR CARTRIDGE TAPE INTERRUPT ROUTINES        FILE 20
               ;                                                       FILE 20
 FF33          CIADR   EQU  B2LEN-2   ;ADDRESS (HAS SEVERAL USES)      FILE 20
 FF31          CISPT   EQU  CIADR-2   ;POINTER TO BUFFER STATUS        FILE 20
 FF2F          CIBPT   EQU  CISPT-2   ;POINTER TO BUFFER               FILE 20
 FF2C          CICNT   EQU  CIBPT-3   ;GENERAL COUNTERS                FILE 20
 FF2B          CITRL   EQU  CICNT-1   ;RE-READ COUNTER, HOLE CNTR      FILE 20
 FF2A          CICSM   EQU  CITRL-1   ;CHECKSUM COUNTER                FILE 20
 FF29          CISTA   EQU  CICSM-1   ;COMMAND SOURCE FLAG             FILE 20
               ;                                                       FILE 20
               ;  STORAGE FOR READ AND RECORD                          FILE 20
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                 ;                                              FILE 20
FF27             NTRED  EQU  CISTA-2    ;PTR INTO BUF FOR NEXT READ   FILE 20
FF25             LTRED  EQU  NTRED-2    ;PTR INTO BUF FOR READ REPEA  FILE 20
FF24             SPCTU  EQU  LTRED-1    ;SWAP CTU IN LOGGING MODE     FILE 20
                 ;                        -1 = SWAP ENABLED           FILE 20
                 ;                         0 = DISABLED               FILE 20
FF23             SVINP  EQU  SPCTU-1    ;"INPDEV" SAVE FOR LOCAL RCR  FILE 20
FF22             SVOUT  EQU  SVINP-1    ;SAVE OUTDEV DURING LCL READ  FILE 20
                 ;                                              FILE 20
                 ;  DATA FOR FORMAT DISPLAY STORAGE             FILE 20
                 ;                                              FILE 20
FF21             EDCOL  EQU  SVOUT-1    ;ENDING COLUMN AND ROW FOR    FILE 20
FF20             EDROW  EQU  EDCOL-1      ;PREV NON-PROTECTED FIELD   FILE 20
                 ;                                              FILE 20
                 ;                                              FILE 20
                 ;  EXTENDED MAIN CODE RAM AREA                 FILE 20
                 ;                                              FILE 20
FE80             XRASP  EQU  177200Q                            FILE 20
                 ;****************************************      FILE 20
FE7F             DVFLG  EQU  XRASP-1    ;DEVICE PRESENT FLAG    FILE 20
                 ;****************************************      FILE 20
0080             CTUIN  EQU  200Q       ;CTU CODE PRESENT       FILE 20
0040             ALTIN  EQU  100Q       ;ALTERNATE I/O PRESENT  FILE 20
                 ;*******************                           FILE 20
                 ; PRINTER VARIABLES *                          FILE 20
                 ;*******************                           FILE 20
FE7D             PRBBG  EQU  DVFLG-2    ;START OF PRINTER BUFFER  FILE 20
FE7B             PRSPT  EQU  PRBBG-2    ;LOAD POINTER           FILE 20
FE79             PRBPT  EQU  PRSPT-2    ;UNLOAD POINTER         FILE 20
FE78             PRABT  EQU  PRBPT-1    ;PRINTER ERROR FLAG     FILE 20
                 ;                        =  0, NO PRINTER ERROR      FILE 20
                 ;                        = -1, PRINT ERROR OCCURRED  FILE 20
FE77             PRFLG  EQU  PRABT-1    ;PRINTER TYPE FLAG      FILE 20
                 ;                        = 0, NO PRINTER       FILE 20
                 ;                        = 1, PARALLEL INTERFACE  FILE 20
                 ;                        = 2, RS-232 INTERFACE FILE 20
                 ;                                              FILE 20
                 ;******************************                FILE 20
                 ; ENTRY VECTORS TO I/O ROUTINES *              FILE 20
                 ;******************************                FILE 20
                 ;                                              FILE 20
                 ;  KEYBOARD INITIATED FUNCTIONS                FILE 20
                 ;                                              FILE 20
2800             IOORG  EQU  24000Q     ;START OF I/O CODE      FILE 20
2802             ICKEY  EQU  IOORG+2    ;I/O CONTROL KEY        FILE 20
2805             RDKEY  EQU  ICKEY+3    ;READ KEY               FILE 20
2808             CLRED  EQU  RDKEY+3    ;CONTROL READ KEY       FILE 20
280B             RCKEY  EQU  CLRED+3    ;RECORD KEY             FILE 20
280E             SLKEY  EQU  RCKEY+3    ;SELECT KEY             FILE 20
2811             TTCTU  EQU  SLKEY+3    ;CTU SELF-TEST          FILE 20
2814             CNDTN  EQU  TTCTU+3    ;CONDITION CARTRIDGE TAPES  FILE 20
2817             RTCTU  EQU  CNDTN+3    ;SOFT RESET FOR CTU     FILE 20
                 ;                                              FILE 20
                 ;  EXTERNALLY INITIATED FUNCTIONS              FILE 20
                 ;                                              FILE 20
281A             ICNTL  EQU  RTCTU+3    ;I/O CONTROL ESCAPE SEQUENCE  FILE 20
281D             ISTGO  EQU  ICNTL+3    ;SEND DEVICE STATUS     FILE 20
2820             IDNGO  EQU  ISTGO+3    ;SEND COMPLETION CODE   FILE 20
2823             IRDGO  EQU  IDNGO+3    ;SEND I/O RECORD        FILE 20
2826             RRDGO  EQU  IRDGO+3    ;START REMOTE RECORD FUNCTIO  FILE 20
```

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                                                                FILE 20
                                                                FILE 20
                                                                FILE 20
                                                                FILE 20
                                                                FILE 20
2829          BRYGO  EQU  RRDGO+3    ;SEND BINARY DATA          FILE 20
282C          CDCDP  EQU  BRYGO+3    ;SEND BINARY FILE          FILE 20
              ;*******************                              FILE 20
              ; INTERNAL ROUTINES *                             FILE 20
              ;*******************                              FILE 20
282F          CTMON  EQU  CDCDP+3    ;MONITOR CARTRIDGE DRIVES  FILE 20
2832          PTPLN  EQU  CTMON+3    ;PUT TOP LINE ONTO I/O DEV'S FILE 20
2835          DOCTI  EQU  PTPLN+3    ;INITIAL CTU INTERRUPT VECTO FILE 20
2837          RABRT  EQU  DOCTI+2    ;ABORT USER INITIATED READ FILE 20
283A          BYCHK  EQU  RABRT+3    ;WAIT UNTIL TAPE I/O DONE  FILE 20
283D          CINTR  EQU  BYCHK+3    ;CTU INTERRUPT ROUTINE     FILE 20
              ;                                                 FILE 20
              ;                                                 FILE 20
              ;*************************************             FILE 20
              ;  BISY  RAM VARIASBLE                             FILE 20
              ;     24  BYTES                                    FILE 20
              ;*************************************             FILE 20
FE67          BYRAM  EQU  177120Q+23  ;UPPER  LIMIT              FILE 20
              ;*************************************             FILE 20
FE67          BYFL1  EQU  BYRAM      ;BISY FLAG 1                FILE 20
              ;*************************************             FILE 20
0001          BYMOV  EQU  1Q         ;BLOCK MOVE                 FILE 20
0002          BYINS  EQU  2Q         ;INSERT                     FILE 20
0004          BYBEF  EQU  4Q         ;BEFEHLSZEILE               FILE 20
0008          BYMF1  EQU  10Q        ;RECORD                     FILE 20
0020          BYMF2  EQU  40Q        ;READ                       FILE 20
0040          BYMF3  EQU  100Q        ;                          FILE 20
0080          BYMF4  EQU  200Q       ;                           FILE 20
              ;*************************************             FILE 20
FE66          BYFL2  EQU  BYFL1-1    ;BISY FLAG 2                FILE 20
              ;*************************************             FILE 20
0001          BYFC1  EQU  1Q         ;FLAG MAIN CODE-            FILE 20
0002          BYFC2  EQU  2Q         ;ROUTINE F C E N T          FILE 20
0004          BYCIF  EQU  4Q         ;FLAG C R I N S             FILE 20
              ;*************************************             FILE 20
FE65          BYFL3  EQU  BYFL2-1    ;BISY FLAG 3                FILE 20
              ;*************************************             FILE 20
              ;BISY ROUT. MAIN CODE Z-FELDER                     FILE 20
              ;*************************************             FILE 20
FE64          BYCI1  EQU  BYFL3-1    ;Z-FELD COLUMN# CRINS       FILE 20
FE63          BYCI2  EQU  BYCI1-1    ;Z-FELD         CRINS       FILE 20
FE62          BYZ01  EQU  BYCI2-1    ;SCRATCH FELD               FILE 20
FE61          BYZ02  EQU  BYZ01-1    ;SCRATCH FELD 2-BYTES       FILE 20
FE5F          BYZ03  EQU  BYZ02-2    ; F R E I                   FILE 20
              ;*************************************             FILE 20
FE5E          BY00C  EQU  BYZ03-1    ;BISY ROUT. INPUT CHARACTER FILE 20
              ;*************************************             FILE 20
              ;                                                  FILE 20
              ;*************************************             FILE 20
              ;   ENTRY VECTORS TO  BISY  ROUTINES  *            FILE 20
              ;*************************************             FILE 20
              ;                                                  FILE 20
              ;           START BISY MODUL  20 K                 FILE 20
              ;                                                  FILE 20
5000          BY000  EQU  50000Q     ;ENTRY BISY MODUL           FILE 20
5003          CRINS  EQU  BY000+3    ;CHAR. INSERT MODUL         FILE 20
5006          BYFRE  EQU  CRINS+3    ;FULL RESET BISY INIT.      FILE 20
5009          BYSRE  EQU  BYFRE+3    ;SOFT RESET BISY INIT.      FILE 20
500C          BY100  EQU  BYSRE+3    ;GANZWORTREGEL              FILE 20
500F          CI104  EQU  BY100+3    ;INSERT FROM DSPLA          FILE 20
```

```
5012            CR050  EQU  CI104+3   ;INSERT FROM DSPLA
                ;
                ;********************
                ; TERMINAL START-UP *
                ;********************
0000                   ORG  0Q
0000            BEGIN  EQU  $
0000   50              DB   VERSN      ;ROM PRESENT FLAGS
0001   00              DB   BEGIN/256   ;(= MOV D,B; NOP)
0002   F3              DI              ;DISABLE INTERRUPTS
0003   3E83            MVI  A,STROM+TMIEN+TMRON
0005   C32F01          JMP  GO         ;GO TO START UP ROUTINE
                ;****************************
                ; FIRMWARE INVOKED INTERRUPT *
                ;****************************
0008   E9              PCHL            ;USE AS PCHL SUBROUTINE CALL
0010                   ORG  BEGIN+20Q
                ;*************************
                ; TOP PLANE INTERRUPT 20B *
                ;*************************
0010   F5              PUSH PSW        ;SAVE A-REGISTER AND FLAGS
0011   B7              ORA  A          ;CLEAR C-FLAG
0012   3E32            MVI  A,TWO      ;SET INTERRUPT CODE
0014   C3CA15          JMP  ITRPT      ;HANDLE UNKNOWN INTERRUPTS
0018                   ORG  BEGIN+30Q
                ;*****************
                ; TIMER INTERRUPT *
                ;*****************
0018   F5              PUSH PSW        ;SAVE A-REGISTER, FLAGS
0019   C5              PUSH B           ;AND REGISTER B AND C
001A   3E33            MVI  A,THREE    ;SET INTERRUPT CODE
001C   C30508          JMP  TINTR      ;CONTINUE TIMER ROUTINE
0020                   ORG  BEGIN+40Q
                ;*********************
                ; DATA COMM INTERRUPT *
                ;*********************
0020   F5              PUSH PSW        ;SAVE A-REGISTER AND FLAGS
0021   3E34            MVI  A,FOUR     ;SET INTERRUPT CODE
0023   C3A911          JMP  DMINT      ;CONTINUE INTERRUPT PROCESS
0028                   ORG  BEGIN+50Q
                ;**********************
                ; I/O DEVICE INTERRUPT *
                ;**********************
0028   F5              PUSH PSW        ;SAVE A-REG, STATUS
0029   E5              PUSH H           ;AND H,L
002A   3E35            MVI  A,FIVE     ;SET INTERRUPT CODE
002C   C39015          JMP  IINTR      ;CONTINUE I/O ROUTINE
0030                   ORG  BEGIN+60Q
                ;
                ;*************************
                ; TOP PLANE INTERRUPT 60B *
                ;*************************
0030   F5              PUSH PSW        ;SAVE A-REGISTER AND FLAGS
0031   B7              ORA  A          ;CLEAR THE C-FLAG
0032   3E36            MVI  A,SIX      ;SET INTERRUPT CODE
0034   C3CA15          JMP  ITRPT      ;HANDLE UNKNOWN INTERRUPTS
0038                   ORG  BEGIN+70Q
                ;**********************
                ; TEST POINT INTERRUPT *
```

FILE 20 (printed at the right of every line)

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                              FILE 20
                              FILE 20
                              FILE 20
                              FILE 20
                              FILE 20
                         ;***********************                        FILE 20
0038    F5                      PUSH PSW        ;SAVE A-REGISTER AND FLAGS     FILE 20
0039    B7                      ORA  A          ;CLEAR THE C-FLAG              FILE 20
003A    3E37                    MVI  A,SEVEN    ;SET INTERRUPT CODE            FILE 20
003C    C3CA15                  JMP  ITRPT      ;HANDLE UNKNOWN INTERRUPTS     FILE 20
0040                            ORG  BEGIN+100Q                                FILE 20
                         ;                                                     FILE 20
                         ;*******************************                       FILE 20
                         ; VECTORS TO MAIN CODE ROUTINES *                     FILE 20
                         ;*******************************                       FILE 20
0040    C35C19          ZSPMS: JMP  DPMSG       ;DISPLAY MESSAGE               FILE 20
0043    C39019                  JMP  RTDSP      ;RESTORE NORMAL DISPLAY        FILE 20
0046    C3D711                  JMP  DCNUM      ;ACCUMULATE DIGIT AND SIGN     FILE 20
0049    C3FB11                  JMP  DPLUS        ;FOR PARAMETERIZED ESCAPE    FILE 20
004C    C30012                  JMP  DMNUS        ;SEQUENCES                   FILE 20
004F    C30905                  JMP  ECEND      ;TERMINATE ESCAPE SEQUENCE     FILE 20
0052    C38C0F                  JMP  CKLIM                                     FILE 20
0055    C3E50F                  JMP  CBLXF                                     FILE 20
0058    C32616                  JMP  SLXFD                                     FILE 20
005B    C32916                  JMP  SLXFA      ;KEYBOARD INITIATED BLK XFR    FILE 20
005E    C3BF16                  JMP  SRTBL      ;START BLOCK RECORD            FILE 20
0061    C3A919                  JMP  CURPH      ;HOME CURSOR (-XMIT ONLY)      FILE 20
0064    C37C10                  JMP  CRPHD      ;CURSOR HOME DOWN              FILE 20
0067    C37F14                  JMP  FECNT      ;CHECK NUMBER OF FREE BLOCKS   FILE 20
006A    C38E06                  JMP  PTBLK      ;RELEASE BLOCKS FROM DISPLAY   FILE 20
006D    C3BE18                  JMP  CEARL      ;CLEAR LINE                    FILE 20
0070    C30410                  JMP  CEARS      ;CLEAR DISPLAY FROM CURSOR     FILE 20
0073    C36F14                  JMP  FDTB2      ;SET BIT N (B-REG = N)         FILE 20
0076    C39211                  JMP  STERM      ;SEND TERMINATORS              FILE 20
0079    C35216                  JMP  STRM1      ;SEND TERMINATOR ONLY          FILE 20
007C    C30817                  JMP  XUTDC      ;TRANSMIT CHARACTER IN A-REG   FILE 20
007F    C3C00D                  JMP  TMTST      ;TERMINAL SELF-TEST            FILE 20
0082    C3A403                  JMP  CINTO      ;EXECUTE CHARACTER FUNCTION    FILE 20
0085    C3D022                  JMP  IITDO      ;INIT FOR DISPLAY GET          FILE 20
0088    C36921                  JMP  GTDSP      ;GET DISPLAY BYTE              FILE 20
008B    C3C70A                  JMP  LFEED      ;DO LINE FEED                  FILE 20
008E    C39520                  JMP  EPAND      ;EXPAND DISPLAY CONTROL CHAR   FILE 20
0091    C3BB0B                  JMP  NTCHR      ;GET NEXT DISPLAY CHARACTER    FILE 20
0094    C37005                  JMP  GTDCM      ;PROCESS DATA COMM INPUT       FILE 20
0097    C33C0B                  JMP  MKSCO      ;LOCATE FIRST UNLOCKED ROW     FILE 20
009A    C3110B                  JMP  MKOFO      ;TURN OFF MEMORY LOCK          FILE 20
009D    C3C911                  JMP  HNGUO      ;HANG TERMINAL ON FATAL ERRO   FILE 20
00A0    5F0E                    DW   BFMSG      ;BUFFER OVERFLOW MESSAGE       FILE 20
00A2    C30E12                  JMP  DTEST      ;DATA COMM SELF-TEST           FILE 20
00A5    C37615                  JMP  IRMGO      ;EXECUTE CODE FROM OPTION RO   FILE 20
00A8    C38608                  JMP  B2DEC      ;CONVERT BINARY TO DECIMAL     FILE 20
00AB    C37508                  JMP  B2DEO      ;CONVERT SINGLE BYTE TO DEC    FILE 20
00AE    C30507                  JMP  RADRA      ;LOCATE CURSOR LOCATION        FILE 20
00B1    C3CE0F                  JMP  GMODE      ;CHECK FOR PAGE MODE           FILE 20
00B4    C36907                  JMP  RADDR      ;DETER.LOC.OF ASCI CHAR.       FILE 20
00B7    C3681C                  JMP  IRPON      ;INSERT CHAR. ON WITH WRAP.    FILE 20
00BA    C30350                  JMP  CRINS      ;INSERT CHARACTER              FILE 20
00BD    C35E1C                  JMP  IHOFF      ;ISERT CHARACTER OFF           FILE 20
00C0    C3181D                  JMP  CURPL      ;CURSOR POINTER LEFT           FILE 20
00C3    C3131D                  JMP  CURPR      ;CURSOR POINTER RIGHT          FILE 20
00C6    C30003                  JMP  WL215      ;RETURN FROM BISY MODUL NO EXECUTE FILE 20
00C9    C36A1E                  JMP  CRRET      ;RETURN                        FILE 20
00CC    C3771E                  JMP  CRPRT      ;                              FILE 20
00CF    C35B0C                  JMP  RLLUP      ;ROLL UP                       FILE 20
00D2    C3880C                  JMP  RLUP2                                     FILE 20
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                                                                    FILE 20
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                                                                    FILE 20
                                                                    FILE 20
                                                                    FILE 20
00D5   C30718          JMP  CD000      ;                            FILE 20
00D8   C38E17          JMP  DLWRP      ;DEL. WITH WRAP              FILE 20
00DB   C31618          JMP  CD100      ;DELETE                      FILE 20
00DE   C3F206          JMP  PTLIN                                   FILE 20
00E1   C3580A          JMP  LNINS      ;INSERT LINE                 FILE 20
00E4   C37B1C          JMP  CRADV      ;CURSOR ADVANCE              FILE 20
00E7   C30F0A          JMP  LNDEL      ;DELETE LINE                 FILE 20
00EA   C31B12          JMP  DXB2D      ;                            FILE 20
00ED   C3251D          JMP  CURPD      ;CURSOR DOWN                 FILE 20
00F0   C3531D          JMP  CURPU      ;CURSOR UP                   FILE 20
00F3   C3DA1B          JMP  FDLS0      ;                            FILE 20
00F6   C32E07          JMP  RADR4      ;                            FILE 20
00F9   C3BA0B          JMP  NTCH0                                   FILE 20
00FC   C3F90B          JMP  RLLDN      ;ROLL DOWN                   FILE 20
00FF   C38B1E          JMP  DSPLC      ;DISPLAY                     FILE 20
0102   C39B1E          JMP  DSPLA      ;DISPLAY                     FILE 20
0105   C36A17          JMP  CHAIN      ;GET. ADR.                   FILE 20
0108   C3630B          JMP  MLOCK      ;TURN ON MEMORY LOCK         FILE 20
010B   C3B60C          JMP  SHST1      ;SET ALT, CHAR. SET          FILE 20
010E   C3921E          JMP  DSPC1      ;DISPLAY CONTROL CHAR.       FILE 20
0111   C3C20F          JMP  CEDIT      ;CECK EDIT MODE              FILE 20
0114   C3D922          JMP  IITDG      ;INITIALIS. DISPLAY GET      FILE 20
0117   C31507          JMP  RADR1                                   FILE 20
011A   C37317          JMP  CKFMS                                   FILE 20
011D   C31F19          JMP  CER02                                   FILE 20
0120   C30309          JMP  DSPL1                                   FILE 20
0123   C31618          JMP  CRDL1                                   FILE 20
0126   C3E018          JMP  CERL0                                   FILE 20
0129   C32F01          JMP  GO                                      FILE 20
012C   C3A102          JMP  WLOOP                                   FILE 20
                ;                                                   FILE 20
                ;*************************************              FILE 20
                ; TERMINAL RESET - START UP TERMINAL *              FILE 20
                ;*************************************              FILE 20
012F            GO     EQU  $                                       FILE 20
012F   D370            OUT  POCSR      ;SET INITIAL PROCESSOR STATE FILE 20
0131   32F5FF          STA  PCCTL      ;SET PROCESSOR STATE         FILE 20
0134   316091          LXI  SP,STACK   ;SET STACK POINTER           FILE 20
0137   3ACDFF          LDA  EONTF                                   FILE 20
013A   FEC3            CPI  IJMP       ;FIRST TURN ON?              FILE 20
                ;*******************************************         FILE 20
013C   C27201          JNZ  INIT       ;YES - INITIALIZE TERMINAL   FILE 20
                ;*******************************************         FILE 20
013F   3AF8FF          LDA  CFLGS      ;NO - GET COMMON FLAGS       FILE 20
0142   E604            ANI  FCRST      ;FORCE FULL RESET?           FILE 20
0144   C27201          JNZ  INIT       ;YES - INITIALIZE TERMINAL   FILE 20
0147   21D0FF          LXI  H,RTTMR    ;NO - GET SOFT RESET TIMER   FILE 20
014A   B6              ORA  M          ;FULL RESET ACTIVE?          FILE 20
014B   CA5301          JZ   GO010      ;NO - START SOFT RESET       FILE 20
014E   FE32            CPI  STDLY      ;STILL IN SOFT RESET START?  FILE 20
                                        (CAUSED BY CONTACT BOUNCE)  FILE 20
                ;                                                   FILE 20
0150   C27201          JNZ  INIT       ;NO - DO FULL RESET          FILE 20
0153            GO010  EQU  $          ;YES - RESTART SOFT RESET    FILE 20
0153   3632            MVI  M,STDLY    ;NO - SET 0.5 SEC TIME OUT   FILE 20
                ;****************                                   FILE 20
                ; DO SOFT RESET *                                   FILE 20
                ;****************                                   FILE 20
0155            GO1    EQU  $          ;ENTRY FOR SOFT RESET        FILE 20
0155   326EFF          STA  DFLGS      ;CLEAR DATA TRANSFER FLAGS   FILE 20
0158   3E07            MVI  A,RETKB                                 FILE 20
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                                                                        FILE 20
                                                                        FILE 20
                                                                        FILE 20
                                                                        FILE 20
                                                                        FILE 20
 015A    CD0870         CALL ZBCTL    ;RESET THE KEYBOARD               FILE 20
 015D    3E02           MVI  A,RETDC                                    FILE 20
 015F    CDC211         CALL DMCT1    ;RESET THE DATA COMM              FILE 20
 0162    211728         LXI  H,RTCTU  ;RESET CARTRDIGE TAPES            FILE 20
 0165    CD7615         CALL IRMGO      ;IF CTU CODE PRESENT            FILE 20
                ;                                                       FILE 20
 0168    CD0950         CALL BYSRE    ;RESET VARIABLE IN BISY           FILE 20
                ;                     MODULN                            FILE 20
                ;                                                       FILE 20
 016B    CD9019         CALL RTDSP    ;RESTORE NORMAL DISPLAY           FILE 20
 016E    FB             EI            ;ENABLE INTERRUPTS                FILE 20
 016F    C38E02         JMP  START    ;RESTART THE WAIT LOOP            FILE 20
                ;                                                       FILE 20
                ;*******************************************             FILE 20
                ; INIT - DO COMPLETE TERMINAL INITIALIZATION *          FILE 20
                ;*******************************************             FILE 20
 0172           INIT    EQU  $                                          FILE 20
 0172    AF             XRA  A        ;CLEAR TO ZERO                    FILE 20
 0173    32CDFF         STA  EONTF    ;CLEAR "JMP" TO FORCE FULL        FILE 20
                ;                       RESET                           FILE 20
 0176    210091         LXI  H,FTRAM  ;SET FIRST ADDRESS                FILE 20
 0179           II010   EQU  $                                          FILE 20
 0179    77             MOV  M,A      ;SET BYTE TO ZERO                 FILE 20
 017A    2C             INR  L        ;ALL BYTES DONE?                  FILE 20
 017B    C27901         JNZ  II010    ;NO - CLEAR NEXT BYTE             FILE 20
                ;                                                       FILE 20
                ;  CLEAR SLOW RAM AREA                                  FILE 20
                ;                                                       FILE 20
 017E    5D             MOV  E,L      ;SET E = 0 FOR 256 BYTES          FILE 20
 017F    26FC           MVI  H,IBUF1/256   ;SET START ADDRESS           FILE 20
 0181           II020   EQU  $                                          FILE 20
 0181    CD7410         CALL CRAL1    ;CLEAR A 256 BYTE SECTION         FILE 20
 0184    BC             CMP  H        ;ALL SECTIONS CLEARED?            FILE 20
 0185    C28101         JNZ  II020    ;NO - CONTINUE CLEARING           FILE 20
                ;***************************                             FILE 20
                ; LOCATE NON-DISPLAY SPACE *                            FILE 20
                ;***************************                             FILE 20
 0188    21FFCF         LXI  H,BSPCE  ;SET UPPER BOUNDARY ADDRESS       FILE 20
 018B    228BFF         SHLD BFEND      ;OF NON-DISPLAY BUFFER ARE      FILE 20
 018E    06B0           MVI  B,LWBUF  ;SET B TO MSB OF LOWER LIMIT      FILE 20
 0190    CD2405         CALL FDRAM                                      FILE 20
 0193    228DFF         SHLD BFBGN    ;STORE BUFFER START ADDRESS       FILE 20
                ;                                                       FILE 20
                ;  LOCATE DISPLAY SPACE                                 FILE 20
                ;                                                       FILE 20
 0196    21FFFA         LXI  H,DPLIM  ;SET UPPER BOUNDARY ADDRESS       FILE 20
 0199    22A8FF         SHLD DPEND      ;OF DISPLAY AREA                FILE 20
 019C    06D0           MVI  B,LWDSP  ;SET B TO MSB OF LOWER LIMIT      FILE 20
 019E    CD2405         CALL FDRAM                                      FILE 20
 01A1    22AAFF         SHLD DPBGN    ;STORE DISPLAY START ADDRESS      FILE 20
                ;                                                       FILE 20
                ;*********************************************          FILE 20
                ; INITIALIZE PROCESSOR BOARD STATE, KEYBOARD, *         FILE 20
                ; AND DATA COMM                               *         FILE 20
                ;*********************************************          FILE 20
 01A4    3E83           MVI  A,STROM+TMIEN+TMRON                        FILE 20
 01A6    32F5FF         STA  PCCTL    ;ENABLE ROM'S AND TIMER           FILE 20
 01A9    3EC9           MVI  A,IRET   ;PUT RETURN CODE INTO             FILE 20
 01AB    326591         STA  ITVEC      ;INTERRUPT VECTOR AND           FILE 20
 01AE    326891         STA  SNVEC      ;DISPLAY SCAN VECTOR            FILE 20
```

```
                   ;                *******************************     FILE 20
                   ;                * INTERRUPTS ARE ENABLED BY THE *   FILE 20
                   ;                * DISPLAY ROUTINES USED DURING  *   FILE 20
                   ;                * INITIALIZATION OF SOFT KEYS   *   FILE 20
                   ;                *******************************     FILE 20
 01B1   CD0270             CALL ZNIKB     ;SET JUMPERS AND DC SWITCHES  FILE 20
 01B4   CD0878             CALL ZNIDC     ;FETCH BUFFER REQUIREMENTS    FILE 20
 01B7   CD3F05             CALL GTBUF     ;ALLOCATE BUFFER SPACE        FILE 20
 01BA   CD0B78             CALL ZN2DC     ;COMPLETE DATA COMM INIT      FILE 20
 01BD   DAC911             JC   HNGUO       ;(PROCESS ERROR IF ANY)     FILE 20
                   ;*****************************                       FILE 20
                   ; SET DEFAULT I/O CONFIGURATION *                    FILE 20
                   ;*****************************                       FILE 20
 01C0   210201             LXI  H,1*256+2 ;OUTPUT = RIGHT CTU (2)       FILE 20
 01C3   224DFF             SHLD OTDEV      ;INPUT = LEFT CTU (1)        FILE 20
 01C6   2A3528             LHLD DOCTI     ;SET INITIAL CARTRIDGE TAPE   FILE 20
 01C9   22E1FF             SHLD CIVEC       ;INTERRUPT VECTOR           FILE 20
 01CC   3EC3               MVI  A,IJMP    ;SET JUMP COMMAND FOR         FILE 20
 01CE   32E0FF             STA  CIJMP       ;CTU INTERRUPT VECTOR       FILE 20
                   ;*****************************************           FILE 20
                   ; IDENTIFY OPTION I/O INCLUDED IN TERMINAL *         FILE 20
                   ;*****************************************           FILE 20
 01D1   3E00               MVI  A,0         ;(SET FOR NO ALTERNATE I/O  FILE 20
 01D3              II110   EQU  $                                       FILE 20
 01D3   47                 MOV  B,A       ;SAVE ALTERNATE I/O STATUS    FILE 20
 01D4   210028             LXI  H,IOORG   ;SET I/O START ADDRESS        FILE 20
 01D7   CD8615             CALL IRM61     ;DOES I/O CODE EXIST?         FILE 20
 01DA   78                 MOV  A,B         ;(GET CURRENT I/O OPTIONS)  FILE 20
 01DB   C2E401             JNZ  II130     ;NO - DON'T SET I/O BIT       FILE 20
 01DE   F680               ORI  CTUIN     ;ELSE SET CTU PRESENT BIT     FILE 20
 01E0   21FDFF             LXI  H,TMTYP   ;SET TERM TYPE TO INDICATE    FILE 20
 01E3   34                 INR  M           ;I/O CODE INCLUDED          FILE 20
 01E4              II130   EQU  $                                       FILE 20
 01E4   327FFE             STA  DVFLG     ;SET I/O OPTIONS FLAG         FILE 20
                   ;                                                    FILE 20
                   ;**************************************              FILE 20
                   ; GENERATE FREE BLOCKS LIST FOR DISPLAY *            FILE 20
                   ;**************************************              FILE 20
 01E7   2AA8FF             LHLD DPEND     ;COMPUTE ADDRESS OF HIGHEST   FILE 20
 01EA   11F1FF             LXI  D,1-BLKSZ ;ADDRESSED DISPLAY BLOCK      FILE 20
 01ED   19                 DAD  D                                       FILE 20
 01EE   7D                 MOV  A,L       ;COMPUTE ADDRESS OF LSB PART  FILE 20
 01EF   F60F               ORI  BLKSM       ;OF PREVIOUS LINE POINTER   FILE 20
 01F1   6F                 MOV  L,A         ;IN HIGHEST ADDRESSED       FILE 20
 01F2   2B                 DCX  H           ;DISPLAY BLOCK              FILE 20
 01F3   3600               MVI  M,0       ;SET IT TO ZERO TO INDICATE   FILE 20
 01F5   2B                 DCX  H           ;END OF FREE LIST           FILE 20
 01F6   EB                 XCHG           ;SET NEXT BLOCK LINK OF       FILE 20
 01F7   2AAAFF             LHLD DPBGN       ;LOWEST ADDRESSED DISPLAY   FILE 20
 01FA   73                 MOV  M,E         ;BLOCK TO POINT TO MSB      FILE 20
 01FB   23                 INX  H           ;PART OF NEXT LINE LINK IN  FILE 20
 01FC   72                 MOV  M,D         ;HIGHEST BLOCK              FILE 20
 01FD   EB                 XCHG           ;SWAP HIGH AND LOW ADDRESSES  FILE 20
 01FE   13                 INX  D         ;ADJUST LOW ADDR TO LOW LIMI  FILE 20
                   ;                FOR LINKING DISPLAY BLOCKS          FILE 20
 01FF   2B                 DCX  H         ;SET FREE BLOCKS HEAD TO LSB  FILE 20
 0200   22ACFF             SHLD FBLKS       ;PART OF NEXT LINE POINTER  FILE 20
                   ;                IN HIGHEST BLOCK                    FILE 20
 0203   D60E               SUI  BLKSZ-2   ;SET B,L TO ADDRESS OF MSB    FILE 20
 0205   44                 MOV  B,H         ;PART OF NEXT BLOCK POINTE  FILE 20
```

```
0206   6F            MOV  L,A        ;IN HIGHEST DISPLAY BLOCK
                ;
                ;********************
                ; CHAIN FREE BLOCKS *
                ;********************
                ;
                ;  B,A = ADDRESS OF UPPER BYTE IN NEXT LOWER BLOCK
                ;  D,E = LOWER LIMIT OF DISPLAY AREA
                ;  H,L = ADDRESS OF MSB PART OF NEXT BLOCK LINK
                ;    IN CURRENT BLOCK
                ;
0207            II210  EQU  $
0207   7D            MOV  A,L        ;COMPUTE ADDRESS OF UPPERMOS
0208   D602          SUI  2           ;BYTE IN NEXT LOWER BLOCK
020A   D20E02        JNC  II220
020D   05            DCR  B
020E            II220  EQU  $
020E   70            MOV  M,B        ;LINK CURRENT BLOCK TO NEXT
020F   2B            DCX  H           ;LOWER BLOCK
0210   77            MOV  M,A
0211   D60E          SUI  BLKSZ-2    ;SET H,L TO ADDRESS OF MSB
0213   6F            MOV  L,A         ;PART OF NEXT BLOCK LINK I
0214   60            MOV  H,B         ;NEXT LOWER BLOCK
0215   93            SUB  E          ;COMPARE AGAINST LOWER LIMIT
0216   78            MOV  A,B
0217   9A            SBB  D          ;DISPLAY AREA EXHAUSTED?
0218   D20702        JNC  II210      ;NO - CONTINUE LINKING BLOCK
                ;                    YES - SET UP INITIAL DISPLAY
                ;
                ;
                ;  SET UP INITIAL SOFT KEYS DISPLAY
                ;
021B   CD4606        CALL IITDS      ;START A NEW DISPLAY LIST
021E   2B            DCX  H          ;SET SOFT KEY START ADDRESS
021F   22A6FF        SHLD STKYS       ;TO FIRST CHARACTER
0222   3E80          MVI  A,CTOFF    ;SET CURRENT AND LAST ROW
0224   32C0FF        STA  CRROW       ;TO CONTROL FOR DISPLAY OF
0227   32C7FF        STA  LTROW
                ;
                ;  SET UP KEY DEFINITIONS
                ;
022A   014EFE        LXI  B,DPSTR-1
022D   214F14        LXI  H,ABLIN    ;TRANSFER ATTRIBUTE LINE
0230   CD7C0B        CALL MVCHR
0233   0E08          MVI  C,NFCTK    ;SET NUMBER OF KEYS TO DEFIN
                ;
                ;  BUILD ATTRIBUTE LINE
                ;
0235            II310  EQU  $
0235   3E39          MVI  A,ZERO+9   ;COMPUTE FUNCTION KEY NUMBER
0237   91            SUB  C
0238   3243FE        STA  DPSTR-ABLEN+2
                ;
                ;  BUILD DEFINITION LINE
                ;
023B   3E78          MVI  A,SALLX    ;COMPUTE CHAR AFTER <ESC>
023D   91            SUB  C           ;(LOWER CASE <P>-<W>)
023E   214DFE        LXI  H,DPSTR-CRLOC
0241   77            MOV  M,A        ;SET DATA CHARACTER
0242   2E41          MVI  L,DPSTR-ABLEN-BASE2
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                                                                  FILE 20
8080 MACRO ASSEMBLER, VER 2.4          ERRORS = 0 PAGE 23         FILE 20
                                                                  FILE 20
                                                                  FILE 20
                                                                  FILE 20
0244   C5             PUSH B        ;TRANSFER SOFT KEY DEFINITIO  FILE 20
0245   CD4C0F         CALL XS2DS      ;TO DISPLAY MEMORY          FILE 20
0248   C1             POP  B                                      FILE 20
0249   0D             DCR  C        ;ALL KEYS DEFINED?            FILE 20
024A   C23502         JNZ  II310    ;NO - DO NEXT KEY             FILE 20
                ;                                                 FILE 20
                ;*********************************************    FILE 20
                ; SOFT KEYS DONE - SET INITIAL DISPLAY STATE *    FILE 20
                ;*********************************************    FILE 20
024D   AF             XRA  A        ;CLEAR LAST LINE POINTER      FILE 20
024E   32A1FF         STA  LLINE                                  FILE 20
0251   3D             DCR  A        ;SET DISPLAY TYPE TO SOFT     FILE 20
0252   32AEFF         STA  DPTYP      ;KEY DISPLAY                FILE 20
0255   CDA919         CALL CURPH    ;HOME THE CURSOR              FILE 20
0258   CD1B1E         CALL SWAP     ;SAVE SOFT KEY PARAMETERS     FILE 20
                ;************************************             FILE 20
                ; INITIALIZE FIRST LINE OF DISPLAY *              FILE 20
                ;************************************             FILE 20
025B   CD4606         CALL IITDS    ;START A NEW DISPLAY LIST     FILE 20
025E   C38602         JMP  II400                                  FILE 20
                ;                                                 FILE 20
                ;                                                 FILE 20
                ;                                                 FILE 20
                ;**************************                       FILE 20
                ; INITIALIZE I/O DEVICES *                        FILE 20
                ;**************************                       FILE 20
                ;                                                 FILE 20
                ;     PRINTER INITIALIZATION ROUTINE              FILE 20
                ;                                                 FILE 20
                ;  CHECK FOR 9866 PRINTER FIRST                   FILE 20
                ;                                                 FILE 20
0261            PRINI EQU  $                                      FILE 20
0261   3A0D80         LDA  PRST1    ;GET STATUS FROM 9866 PCA     FILE 20
0264   B7             ORA  A        ;IS INTERFACE INSTALLED?      FILE 20
0265   CA7002         JZ   PRI10    ;NO - LOOK FOR RS-232 PRNTR   FILE 20
0268   3A0F80         LDA  PRCL1    ;YES - CLEAR THE PRINTER      FILE 20
026B   3E01           MVI  A,1      ;SET PRINTER FLAG FOR         FILE 20
026D   C38202         JMP  PR120      ;9866 PRINTER (= 1)         FILE 20
                ;                                                 FILE 20
                ;     RS-232        PRINTER 2                     FILE 20
                ;                                                 FILE 20
0270            PRI10 EQU $                                       FILE 20
0270   3A2580         LDA  PRST2    ;GET STATUS FROM RS-232 PCA   FILE 20
0273   B7             ORA  A        ;IS RS-232 PCA INSTALLED?     FILE 20
0274   CA8202         JZ   PR120    ;NO - SET FOR NO PRINTER      FILE 20
                ;                                                 FILE 20
0277   3A4580         LDA  PRCF2    ;YES - GET CONFIG. STRAPS     FILE 20
027A   E61F           ANI  PRBD2    ;ISOLATE BAUD AND PARITY      FILE 20
027C   17             RAL           ;ADJUST FOR CONTROL OUTPUT    FILE 20
027D   324580         STA  PTOT2    ;SET BOARD TO CONFIGURATION   FILE 20
0280   3E02           MVI  A,2      ;SET FLAG FOR RS-232 PRINTER  FILE 20
                ;                                                 FILE 20
0282            PR120 EQU  $                                      FILE 20
0282   3277FE         STA  PRFLG    ;SET PRINTER FLAG             FILE 20
0285   C9             RET                                         FILE 20
                ;                                                 FILE 20
                ;                                                 FILE 20
0286            II400 EQU  $                                      FILE 20
0286   3EC3           MVI  A,IJMP   ;SET JUMP COMMAND FOR         FILE 20
0288   32CDFF         STA  EONTF      ;CHARACTER FUNCTION VECTOR  FILE 20
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                                                                  FILE 20
                                                                  FILE 20
                                                                  FILE 20
                                                                  FILE 20
                                                                  FILE 20
                       ;                                          FILE 20
 028B    CD0650              CALL BYFRE     ;INITIALISIERE        FILE 20
                       ;                     BISY  MODULN         FILE 20
                       ;                                          FILE 20
                       ;****************************************  FILE 20
                       ; INITIALIZE FLAGS AND RANGE TABLE ADDRESS *  FILE 20
                       ;****************************************  FILE 20
 028E                  START   EQU  $                             FILE 20
 028E    CD6102              CALL PRINI     ;INITIALIS PRINTER    FILE 20
 0291    CD0905              CALL ECEND     ;RESET NORMAL RANGE TABLE  FILE 20
 0294    3A2970              LDA  FSALT     ;SET INITIAL ALTERNATE  FILE 20
 0297    3272FF              STA  CRSET       ;CHARACTER SET      FILE 20
 029A    CD991C              CALL CADV1     ;CLEAR CURSOR ADVANCE FLAG  FILE 20
 029D    3D                  DCR  A         ;CLEAR SPOW LATCH     FILE 20
 029E    326CFF              STA  SPOWL                           FILE 20
                       ;                                          FILE 20
                       ;                                          FILE 20
                       ;  WAIT LOOP                               FILE 20
                       ;                                          FILE 20
 02A1                  WLOOP   EQU  $                             FILE 20
 02A1    316091              LXI  SP,STACK  ;SET STACK POINTER    FILE 20
 02A4    CDA405              CALL GTDC1     ;SET DISPLAY CURSOR   FILE 20
                       ;**************************                FILE 20
                       ; CHECK FOR DATA COMM INPUT *              FILE 20
                       ;**************************                FILE 20
 02A7                  WL010   EQU  $                             FILE 20
 02A7    CD7005              CALL GTDCM     ;GET DATA COMM INPUT IF ANY  FILE 20
                       ;*************************                 FILE 20
                       ; CHECK FOR KEYBOARD INPUT *               FILE 20
                       ;*************************                 FILE 20
 02AA    3A6FFF              LDA  MLGS2     ;GET MODE FLAGS       FILE 20
 02AD    E608                ANI  ECINP     ;ESCAPE SEQUENCE LOCK OUT?  FILE 20
 02AF    C2D002              JNZ  WL020     ;YES - IGNORE KEYBOARD  FILE 20
 02B2    3A6EFF              LDA  DFLGS     ;NO - GET DATA TRANSFER FLAG  FILE 20
 02B5    E610                ANI  FTK2D     ;FUNCTION KEY TO DISPLAY?  FILE 20
 02B7    C42515              CNZ  GFCTK     ;YES - GET FUNCTION KEY CHAR  FILE 20
 02BA    C2E502              JNZ  WL200     ;PROCESS IF AVAILABLE  FILE 20
 02BD    CD0570              CALL ZETKY     ;ANY KEYBOARD INPUT?  FILE 20
 02C0    CAE502              JZ   WL200     ;YES - PROCESS IT     FILE 20
                       ;                                          FILE 20
                       ; IF KEYBOARD LOCKED, A = CHARACTER HIT, IF ANY  FILE 20
                       ; OTHERWISE A = 377B                       FILE 20
                       ;                                          FILE 20
 02C3    FE0D                CPI  CR        ;RETURN KEY HIT?      FILE 20
 02C5    C2D002              JNZ  WL020     ;NO - CHECK CTU & DISPATCHER  FILE 20
 02C8    3A65FF              LDA  IFLGS     ;USER READ OR FILE READ  FILE 20
 02CB    E606                ANI  UREAD+FLRED    ;PENDING?        FILE 20
 02CD    C43728              CNZ  RABRT     ;YES - ABORT READ KEY  FILE 20
                       ;                                          FILE 20
                       ;***************************************   FILE 20
                       ; CHECK CTU'S AND PENDING BLOCK TRANSFERS *  FILE 20
                       ;***************************************   FILE 20
 02D0                  WL020   EQU  $                             FILE 20
 02D0    2154FF              LXI  H,SNCNT   ;DECREMENT SCAN COUNT  FILE 20
 02D3    35                  DCR  M         ;11 SCANS DONE?       FILE 20
 02D4    F2A702              JP   WL010     ;NO - RESTART DO NOTHING LOO  FILE 20
 02D7    360A                MVI  M,10      ;YES - RESET SCAN COUNT  FILE 20
 02D9    CD6891              CALL SNVEC     ;DO OPTIONAL DISPLAY SCAN  FILE 20
 02DC    CD6915              CALL ICTMN     ;MONITOR TAPE DRIVES  FILE 20
 02DF    CD9D04              CALL DPTCH     ;CHECK PENDING BLOCK XFRS  FILE 20
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                                                                                  FILE 20
8080 MACRO ASSEMBLER, VER 2.4            ERRORS = 0 PAGE 25                       FILE 20
                                                                                  FILE 20
                                                                                  FILE 20
                                                                                  FILE 20
  02E2   C3A702          JMP  WL010      ;RESTART DO NOTHING LOOP                 FILE 20
                 ;                                                                FILE 20
                 ;                                                                FILE 20
                 ;  KEY HIT - CHECK FOR FUNCTION KEY                              FILE 20
                 ;                                                                FILE 20
  02E5           WL200   EQU  $                                                   FILE 20
  02E5   329CFF          STA  CARIN      ;SAVE KEYBOARD CHARACTER                 FILE 20
  02E8   4F              MOV  C,A        ;SAVE THE BYTE IN C-REGISTER             FILE 20
  02E9   3EFE            MVI  A,377Q-SACOM                                        FILE 20
  02EB   CDE015          CALL CRDFL      ;CLEAR DATA COMM INPUT FLAG              FILE 20
  02EE   3AF8FF          LDA  CFLGS      ;GET COMMON FLAGS                        FILE 20
  02F1   2F              CMA             ;BOTH RECEIVE MODE FLAG SET              FILE 20
  02F2   E630            ANI  RVMDE+RMSET    ;AND REMOTE ENABLED?                 FILE 20
  02F4   C2FD02          JNZ  WL205      ;NO - PROCESS KEYBOARD INPUT             FILE 20
  02F7   CD1470          CALL ZBELL      ;YES - SOUND BELL AND                    FILE 20
  02FA   C3A702          JMP  WL010        ;IGNORE KEY                            FILE 20
                 ;                                                                FILE 20
  02FD           WL205   EQU  $                                                   FILE 20
  02FD   C30050          JMP  BY000      ;ENTRY STEUERUNG BISY MODULE             FILE 20
  0300           WL215   EQU  $          ;RETURN FROM BISY MODUL                  FILE 20
                 ;                                                                FILE 20
  0300   AF              XRA  A          ;NO - PROCESS THE KEY                    FILE 20
  0301   57              MOV  D,A          ;(SET A,D = 0)                         FILE 20
  0302   B1              ORA  C          ;FUNCTION KEY?                           FILE 20
  0303   F26403          JP   WL300      ;NO - PROCESS ASCII KEY                  FILE 20
  0306   FEA1            CPI  FCLIM      ;TABLE FUNCTION?                         FILE 20
  0308   F21A03          JP   WL210      ;NO - CHECK FOR F1-F8                    FILE 20
  030B   D698            SUI  FCLWR      ;COMPUTE TABLE INDEX                     FILE 20
  030D   87              ADD  A                                                   FILE 20
  030E   5F              MOV  E,A        ;COMPUTE TABLE ADDRESS                   FILE 20
  030F   213114          LXI  H,FCTAB      ;(D = 0)                               FILE 20
  0312   19              DAD  D                                                   FILE 20
  0313   CD6A17          CALL CHAIN      ;GET THE FUNCTION ADDRESS                FILE 20
  0316   CF              RST  RTJMP      ;GO PERFORM FUNCTION                     FILE 20
  0317   C3A102          JMP  WLOOP      ;RESTART WAIT LOOP                       FILE 20
                 ;                                                                FILE 20
                 ;  CHECK FOR F1-F8 KEY                                           FILE 20
                 ;                                                                FILE 20
  031A           WL210   EQU  $                                                   FILE 20
  031A   FEF0            CPI  FCODE      ;IS THE KEY F1-F8?                       FILE 20
  031C   DA2D03          JC   WL250      ;NO - EXPAND ESCAPE SEQUENCE             FILE 20
  031F   FEF8            CPI  F8COD+1                                             FILE 20
  0321   D22D03          JNC  WL250      ;NO - EXPAND ESCAPE SEQUENCE             FILE 20
  0324   CD8917          CALL CKSFK      ;SOFT KEY MODE?                          FILE 20
  0327   CC7B13          CZ   FTKEY      ;NO - PROCESS FCT KEY                    FILE 20
  032A   C3A102          JMP  WLOOP      ;RESTART WAIT LOOP                       FILE 20
                 ;                                                                FILE 20
                 ;************************                                        FILE 20
                 ; PROCESS FUNCTION KEYS *                                        FILE 20
                 ;************************                                        FILE 20
  032D           WL250   EQU  $                                                   FILE 20
  032D   0E1B            MVI  C,ESC      ;SET ESCAPE AS INPUT CHAR                FILE 20
  032F           WL260   EQU  $                                                   FILE 20
  032F   CD5F06          CALL LCLIO      ;PROCESS KEYBOARD INPUT                  FILE 20
  0332   219CFF          LXI  H,CARIN    ;RECALL KEYBOARD INPUT                   FILE 20
  0335   7E              MOV  A,M                                                 FILE 20
  0336   FEFF            CPI  EHNCF      ;DISPLAY ENHANCEMENT CODE?               FILE 20
  0338   CA5003          JZ   WL270      ;YES - EXPAND INTO AMPERSAND             FILE 20
  033B   FEFE            CPI  SFOR1      ;ENTER FOREIGN MODE CONTROL?             FILE 20
  033D   CA5703          JZ   WL280      ;YES - CONTINUE SEQUENCE                 FILE 20
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Cursor Advance 100

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 0340   FEFD            CPI  SFOR2      ;COMPLETE FOREIGN MODE SET?              FILE 20
 0342   CA5D03          JZ   WL290      ;YES - SET ENDING SEQUENCE               FILE 20
 0345   E67F            ANI  177Q       ;NO - MASK OUT UPPER BIT                 FILE 20
 0347   BE              CMP  M          ;FUNCTION COMPLETED?                     FILE 20
 0348   CAA102          JZ   WLOOP      ;YES - RESTART WAIT LOOP                 FILE 20
 034B   77              MOV  M,A        ;NO - SET NEW KEYBOARD CHAR              FILE 20
 034C   4F              MOV  C,A                                                 FILE 20
 034D   C32F03          JMP  WL260      ;PERFORM THE DESIRED FUNCTON             FILE 20
                ;                                                                FILE 20
 0350           WL270   EQU  $                                                    FILE 20
 0350   36E4            MVI  M,ECLWD    ;SET <ESC>-<LOWER CASE D> AS             FILE 20
 0352   0E26            MVI  C,APSND      ;CURRENT KEYBOARD CHARACTE             FILE 20
 0354   C32F03          JMP  WL260      ;PROCESS AMPERSAND                       FILE 20
                ;                                                                FILE 20
 0357           WL280   EQU  $                                                    FILE 20
 0357   35              DCR  M          ;SET TO NEXT STEP CODE                   FILE 20
 0358   0E29            MVI  C,APARN    ;ENTER RIGHT PARENTHESIS                 FILE 20
 035A   C32F03          JMP  WL260      ;PROCESS RIGHT PARENTHESIS               FILE 20
                ;                                                                FILE 20
 035D           WL290   EQU  $                                                    FILE 20
 035D   368E            MVI  M,ESCSO    ;SET <ESC>-<SO> AS CURRENT               FILE 20
 035F   0E01            MVI  C,C          ;KEYBOARD CHARACTER                    FILE 20
 0361   C32F03          JMP  WL260      ;PROCESS LETTER <C>                      FILE 20
                ;                                                                FILE 20
                ;                                                                FILE 20
                ;   DISPLAYABLE CHARACTER - CHECK FOR APPROACHING                FILE 20
                ;     END OF LINE WARNING                                        FILE 20
                ;                                                                FILE 20
 0364           WL300   EQU  $                                                    FILE 20
 0364   FE20            CPI  CLLIM      ;CONTROL CODE?                           FILE 20
 0366   DA8703          JC   WL310      ;YES - DON'T LOOK FOR BELL               FILE 20
 0369   3A6EFF          LDA  DFLGS      ;NO - GET DATA TRANSFER FLAG             FILE 20
 036C   E610            ANI  FTK2D      ;PROCESSING FUNCTION KEY OR              FILE 20
 036E   CC7317          CZ   CKFMS        ;FORMAT/SOFT KEY MODE?                 FILE 20
 0371   C28703          JNZ  WL310      ;YES - SKIP BELL COLUMN CHEC             FILE 20
 0374   3AD1FF          LDA  ECFLG      ;NO - GET ESCAPE SEQ FLAG                FILE 20
 0377   B7              ORA  A          ;CURRENTLY IN ESCAPE SEQ?                FILE 20
 0378   C28703          JNZ  WL310      ;YES - DON'T LOOK FOR BELL               FILE 20
 037B   3AC1FF          LDA  CRCOL      ;NO - GET CURRENT COLUMN                 FILE 20
 037E   21BEFF          LXI  H,RTMGN    ;COMPARE TO RIGHT MARGIN                 FILE 20
 0381   96              SUB  M          ;CLOSE ENOUGH TO RIGHT MARGI             FILE 20
 0382   C651            ADI  BLLIM        ;TO SOUND BELL?                        FILE 20
 0384   CC1470          CZ   ZBELL      ;YES - SOUND BELL                        FILE 20
                ;***************************                                      FILE 20
                ; PROCESS THE KEY FUNCTION *                                      FILE 20
                ;***************************                                      FILE 20
 0387           WL310   EQU  $                                                    FILE 20
 0387   CD6A06          CALL LCLIN      ;PERFORM LOCAL INPUT ROUTINE             FILE 20
 038A   3A9CFF          LDA  CARIN      ;RECALL KEYBOARD INPUT CHAR              FILE 20
 038D   FE0D            CPI  CR         ;WAS IT A RETURN?                        FILE 20
 038F   C2A102          JNZ  WLOOP      ;NO - RESTART WAIT LOOP                  FILE 20
 0392   3AF3FF          LDA  MFLG2      ;YES - GET MODE FLAGS                    FILE 20
 0395   E604            ANI  ATOLF      ;AUTO LINE FEED ENABLED?                 FILE 20
 0397   CAA102          JZ   WLOOP      ;NO - RESTART WAIT LOOP                  FILE 20
 039A   2E01            MVI  L,1        ;YES - DELAY 10 MILLISECONDS             FILE 20
 039C   CD2812          CALL DELAY        ;THEN SEND LINE FEED                   FILE 20
 039F   3E0A            MVI  A,LF                                                FILE 20
 03A1   C3E502          JMP  WL200      ;FAKE LINE FEED FROM KEYBOAR             FILE 20
                ;                                                                FILE 20
                ;************************                                         FILE 20
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```
                                                                                     FILE 20
8080 MACRO ASSEMBLER, VER 2.4            ERRORS = 0 PAGE 27                          FILE 20
                                                                                     FILE 20
                                                                                     FILE 20
                                                                                     FILE 20
                        ; S U B R O U T I N E S *                                    FILE 20
                        ;************************                                    FILE 20
                        ;                                                            FILE 20
                        ; * * * * * * * * * * * * * * * * * * * * * * * * *          FILE 20
                        ;                                                            FILE 20
                        ;  CHINT - INTERPRET INPUT CHARACTER                         FILE 20
                        ;                                                            FILE 20
                        ;     ENTRY:  C = INPUT CHARACTER                            FILE 20
                        ;                                                            FILE 20
                        ;     EXIT :  Z - FAST STORE USED                            FILE 20
                        ;             NZ - FULL PROCESSING USED                      FILE 20
                        ;             A-E,L DESTROYED                                FILE 20
                        ;                                                            FILE 20
                        ;  TRY FAST STORE FIRST                                      FILE 20
                        ;                                                            FILE 20
03A4                    CINTO   EQU   $          ;ENTRY FOR I/O INPUT                FILE 20
03A4    216FFF                  LXI   H,MLGS2    ;SET H,L TO MODE FLAGS 2            FILE 20
03A7    79                      MOV   A,C        ;PUT INPUT CHAR IN A-REG            FILE 20
03A8    FE0A                    CPI   LF         ;CHARACTER = LINE FEED?             FILE 20
03AA    C2B603                  JNZ   CI000      ;NO - CHECK FOR CR/DC3              FILE 20
03AD    7E                      MOV   A,M        ;YES - GET MODE FLAGS 2             FILE 20
03AE    F640                    ORI   WPFLG      ;TURN ON WRAP FLAG                  FILE 20
03B0    BE                      CMP   M          ;WRAP FLAG ALREADY ON?              FILE 20
03B1    CAC403                  JZ    CHINT      ;YES - EXECUTE LINE FEED            FILE 20
03B4    77                      MOV   M,A        ;NO - SET WRAP FLAG                 FILE 20
03B5    C9                      RET                 ;AND IGNORE LINE FEED            FILE 20
                        ;                                                            FILE 20
03B6                    CI000   EQU   $                                              FILE 20
03B6    FE0D                    CPI   CR         ;CHARACTER = RETURN?                FILE 20
03B8    CA2D04                  JZ    CINT1      ;YES - DON'T SET WRAP FLAG          FILE 20
03BB    FE13                    CPI   DC3        ;CHARACTER = DC3?                   FILE 20
03BD    CAC403                  JZ    CHINT      ;YES - DON'T SET WRAP FLAG          FILE 20
03C0    7E                      MOV   A,M        ;NO - SET WRAP FLAG                 FILE 20
03C1    F640                    ORI   WPFLG                                          FILE 20
03C3    77                      MOV   M,A        ;UPDATE MODE FLAGS 2                FILE 20
03C4                    CHINT   EQU   $                                              FILE 20
03C4    2167FF                  LXI   H,CAFLG                                        FILE 20
03C7    46                      MOV   B,M        ;WAS LAST CHARACTER FUNCTION        FILE 20
03C8    05                      DCR   B             ;A CURSOR ADVANCE?               FILE 20
03C9    FA2D04                  JM    CI100      ;NO - DO FULL PROCESSING            FILE 20
03CC    70                      MOV   M,B        ;YES - CLEAR FLAG                   FILE 20
03CD    79                      MOV   A,C        ;PUT INPUT CHARACTER IN A-RE        FILE 20
03CE    FE20                    CPI   CLLIM      ;IS CHARACTER A CONTROL CODE        FILE 20
03D0    FA1C04                  JM    CI050      ;YES - CHECK FOR DISPLAY FCT        FILE 20
                        ;                         NO - DO FAST STORE                 FILE 20
                        ;                                                            FILE 20
                        ;                                                            FILE 20
                        ;  FAST STORE PROCESSING                                     FILE 20
                        ;                                                            FILE 20
03D3                    CI010   EQU   $                                              FILE 20
03D3    2E6C                    MVI   L,SPOWL-BASE                                   FILE 20
03D5    46                      MOV   B,M        ;GET THE SPOW LATCH IN B-REG        FILE 20
03D6    2AC3FF                  LHLD  CRADR      ;GET LAST CHAR DONE ADDRESS         FILE 20
03D9    7E                      MOV   A,M        ;GET LAST CHARACTER DONE            FILE 20
03DA    B7                      ORA   A          ;IS IT ASCII?                       FILE 20
03DB    FA2D04                  JM    CI100      ;NO - DO FULL PROCESSING            FILE 20
03DE    2B                      DCX   H          ;YES - GET NEXT CHARACTER           FILE 20
03DF    7E                      MOV   A,M                                            FILE 20
03E0    B7                      ORA   A          ;IS IT ASCII?                       FILE 20
03E1    F20104                  JP    CI020      ;YES - OVERLAY EXISTING CHAR        FILE 20
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03E4   FECC           CPI  EOL       ;IS IT EOL?
03E6   C22D04         JNZ  CI100     ;NO - DO FULL PROCESSING
03E9   47             MOV  B,A       ;YES - SAVE EOL AND CLEAR
03EA   2B             DCX  H          ;SPOW LATCH COMPARE
03EB   7E             MOV  A,M       ;GET NEXT CHARACTER
03EC   FEC3           CPI  FILL      ;IS IT AN END OF LINE FILL?
03EE   C22D04         JNZ  CI100     ;NO - DO FULL PROCESSING
03F1   3AC0FF         LDA  CRROW     ;YES - ADD CHAR TO DISPLAY
03F4   F640           ORI  MYEOL     ;SET DMA OFF WITH EOL SKIP
03F6   F3             DI             ;DISABLE INTERRUPTS
03F7   322780         STA  ICRRW     ;TURN OFF DMA
03FA   3E04           MVI  A,RTOFF   ;DISABLE RESET KEY
03FC   328380         STA  IKBCO
03FF   70             MOV  M,B       ;STORE NEW EOL
0400   23             INX  H         ;SET TO OLD EOL ADDRESS
                ;
                ;
                ;  ADD CHARACTER TO DISPLAY
                ;
0401            CI020  EQU  $
0401   79             MOV  A,C       ;RECALL THE INPUT CHARACTER
0402   B8             CMP  B         ;STORE INHIBITED BY SPOW?
0403   CA0704         JZ   CI030     ;YES - BYPASS STORE
0406   71             MOV  M,C       ;NO - STORE THE BYTE
0407            CI030  EQU  $
0407   CD1D0F         CALL DSLN1     ;TURN DISPLAY BACK ON
040A   22C3FF         SHLD CRADR     ;STORE NEW CURRENT ADDRESS
040D   21C8FF         LXI  H,LTCOL   ;INCREMENT LSTCOL
0410   34             INR  M
0411   CD7B1C         CALL CRADV     ;ADVANCE CURSOR
                ;***************************************
                ; CHINT2 - SET CURSOR COLUMN ON DISPLAY *
                ;***************************************
                ;
                ;  EXIT :  Z TRUE
                ;          A DESTROYED
                ;
0414            CINT2  EQU  $
0414   BF             CMP  A
0415   3AC1FF         LDA  CRCOL     ;GET CURRENT COLUMN NUMBER
0418   320780         STA  ICRCL     ;SET DISPLAY CURSOR COLUMN
041B   C9             RET            ;RETURN
                ;
                ;  CONTROL CODE - CHECK FOR DISPLAY FUNCTIONS
                ;
041C            CI050  EQU  $
041C   CDBC0F         CALL CDSPF     ;DISPLAY FUNCTIONS ENABLED?
041F   CA2D04         JZ   CI100     ;NO - DO FULL PROCESSING
0422   79             MOV  A,C       ;YES - RECALL INPUT CHARACTE
0423   FE0D           CPI  CR        ;IS IT RETURN CHARACTER?
0425   CA2D04         JZ   CI100     ;YES - DO FULL PROCESSING
0428   FE1B           CPI  ESC       ;IT IT AN ESCAPE?
042A   C2D303         JNZ  CI010     ;NO - DO FAST PROCESSING
                ;                     YES - DO FULL PROCESSING
                ;
                ;
                ;  FULL PROCESSING
                ;
042D            CINT1  EQU  $
042D            CI100  EQU  $
```

FILE 20 (repeated in right column on every line)

```
0420   61              MOV  H,C                                                FILE 20
042E   69              MOV  L,C        ;SET "CHAR" AND "DCHAR" TO              FILE 20
042F   2288FF          SHLD CHAR        ;CURRENT CHARACTER                     FILE 20
0432   CD991C          CALL CADV1      ;CLEAR CURADV FLAG                      FILE 20
                 ;*****************************                                FILE 20
                 ; DETERMINE CHARACTER FUNCTION *                              FILE 20
                 ;*****************************                                FILE 20
0435   2AD2FF          LHLD RNGTA      ;GET CURRENT RANGE TABLE ADD            FILE 20
                 ;****************************                                 FILE 20
                 ; ADVANCE TO NEXT TABLE ENTRY *                               FILE 20
                 ;****************************                                 FILE 20
0438             CI110  EQU  $                                                 FILE 20
0438   23              INX  H                                                  FILE 20
0439   23              INX  H                                                  FILE 20
043A   23              INX  H                                                  FILE 20
                 ;*************************************                        FILE 20
                 ; COMPARE CHARACTER TO CURRENT RANGE *                        FILE 20
                 ;*************************************                        FILE 20
043B   79              MOV  A,C        ;PUT CHARACTER IN A-REGISTER            FILE 20
043C   96              SUB  M          ;CHARACTER >= LOWER BOUND?              FILE 20
043D   23              INX  H           ;(SET H,L TO UPPER BOUND)              FILE 20
043E   DA3804          JC   CI110      ;NO - ADVANCE TO NEXT ENTRY             FILE 20
0441   07              RLC             ;YES - DOUBLE DIFFERENCE AND            FILE 20
0442   47              MOV  B,A         ;SAVE VALUE IN B-REGISTER              FILE 20
0443   7E              MOV  A,M        ;GET UPPER BOUND                        FILE 20
0444   B9              CMP  C          ;CHARACTER <= UPPER BOUND?              FILE 20
0445   DA3804          JC   CI110      ;NO - ADVANCE TO NEXT ENTRY             FILE 20
                 ;**********************************************               FILE 20
                 ; CHARACTER FUNCTION FOUND - GET FUNCTION ADDR *              FILE 20
                 ;**********************************************               FILE 20
0448   23              INX  H                                                  FILE 20
0449   5E              MOV  E,M        ;PUT ADDRESS ENTRY IN                   FILE 20
044A   23              INX  H           ;A (= MSB), E (= LSB)                  FILE 20
044B   7E              MOV  A,M                                                FILE 20
044C   E67F            ANI  177Q       ;MASK OUT HIGH ORDER BIT                FILE 20
044E   57              MOV  D,A         ;(PUT NEW MSB INTO D-REG)              FILE 20
044F   96              SUB  M          ;USE INDEX TABLE?                       FILE 20
0450   C25904          JNZ  CI200      ;NO - USE AS FUNCTON ADDRESS            FILE 20
0453   68              MOV  L,B        ;YES - PUT DIFFERENCE IN H,L            FILE 20
0454   67              MOV  H,A         ;(A = 0)                               FILE 20
0455   19              DAD  D          ;COMPUTE TABLE ADDRESS                  FILE 20
0456   5E              MOV  E,M        ;GET INDEX TABLE VALUE                  FILE 20
0457   23              INX  H                                                  FILE 20
0458   56              MOV  D,M                                                FILE 20
                 ;                                                             FILE 20
                 ;****************************                                 FILE 20
                 ; PERFORM CHARACTER FUNCTION *                                FILE 20
                 ;****************************                                 FILE 20
0459             CI200  EQU  $                                                 FILE 20
0459   EB              XCHG                                                    FILE 20
045A   22CEFF          SHLD CTFAD      ;SET FUNCTION ADDRESS                   FILE 20
045D   0601            MVI  B,1        ;SET INITIAL FUNCTION INDEX             FILE 20
045F   26FF            MVI  H,BASEH    ;SET H TO DATA PAGE                     FILE 20
0461   3E04            MVI  A,RTOFF    ;DISABLE RESET KEY                      FILE 20
0463   328380          STA  IKBCO                                              FILE 20
                 ;**********************************************               FILE 20
0466   CDCDFF          CALL EONTF      ;EXECUTE CHARACTER FUNCTION             FILE 20
                 ;**********************************************               FILE 20
0469   CD230F          CALL DSLN3      ;RE-ENABLE RESET KEY                    FILE 20
046C   CDBC0F          CALL CDSPF      ;DISPLAY FUNCTIONS ENABLED?             FILE 20
```

```
                                                              FILE 20
                                                              FILE 20
                                                              FILE 20
                                                              FILE 20
                                                              FILE 20
046F  C27E04          JNZ  CI270     ;YES - DON'T END ESCAPE SEQ'  FILE 20
0472  21D1FF          LXI  H,ECFLG   ;NO - CHECK ESCAPE FLAG       FILE 20
0475  46              MOV  B,M                                     FILE 20
0476  05              DCR  B         ;ESCAPE SEQUENCE IN PROGRESS  FILE 20
0477  FA7E04          JM   CI270     ;NO - DON'T CHANGE ESC FLAG   FILE 20
047A  70              MOV  M,B       ;YES - UPDATE ESCAPE COUNTER  FILE 20
047B  CC0905          CZ   ECEND     ;RESET RANGE TABLE POINTER    FILE 20
                ;                      COUNTER BECAME ZERO         FILE 20
047E            CI270 EQU  $                                       FILE 20
047E  3A88FF          LDA  CHAR      ;SAVE THE LAST CHARACTER      FILE 20
0481  3269FF          STA  LCHAR       ;PROCESSED                  FILE 20
0484  BC              CMP  H         ;SET Z FALSE                  FILE 20
0485  C9              RET            ;RETURN                       FILE 20
                ;                                                  FILE 20
                ;*********************************************     FILE 20
                ; CHECK CONTROL CODES FOR BLOCK TERMINATOR OR *    FILE 20
                ;   BLOCK TRANSFER TRIGGER                    *    FILE 20
                ;*********************************************     FILE 20
                ;                                                  FILE 20
                ;  ENTRY:  C = INPUT CHARACTER                     FILE 20
                ;                                                  FILE 20
0486            CKCTL EQU  $                                       FILE 20
0486  3A0478          LDA  BKTRM     ;GET BLOCK TERMINATOR CHAR    FILE 20
0489  B9              CMP  C         ;INPUT = BLOCK TERMINATOR?    FILE 20
048A  CAEE0C          JZ   SKYDS     ;YES - DISPLAY INPUT          FILE 20
048D  3A6EFF          LDA  DFLGS     ;GET TRANSFER FLAGS           FILE 20
0490  E601            ANI  SACOM     ;INPUT FROM DATA COMM?        FILE 20
0492  C8              RZ             ;NO - DO NOTHING              FILE 20
0493  3A0278          LDA  TIGGR     ;IS INPUT CHARACTER THE       FILE 20
0496  B9              CMP  C           ;BLOCK TRANSFER TRIGGER?    FILE 20
0497  C0              RNZ            ;NO - DO NOTHING              FILE 20
                ;                                                  FILE 20
0498            CKCT1 EQU  $         ;SET BLOCK TRANSFER TRIGGER   FILE 20
0498  3E01            MVI  A,STTRG   ;GO TO DATA COMM ROUTINE TO   FILE 20
049A  C3B711          JMP  DMCTL       ;SET BLOCK TRANSFER TRIGGE  FILE 20
                ;                                                  FILE 20
                ;******************************************        FILE 20
                ; DSPTCH - DISPATCH PENDING BLOCK TRANSFERS *      FILE 20
                ;******************************************        FILE 20
049D            DPTCH EQU  $                                       FILE 20
049D  3AF8FF          LDA  CFLGS     ;GET COMMON FLAGS             FILE 20
04A0  E601            ANI  BKTRG     ;BLOCK TRANSFER TRIGGER SET?  FILE 20
04A2  C8              RZ             ;NO - RETURN                  FILE 20
04A3  3A70FF          LDA  MFLGS     ;YES - RELEASE ANY PENDING    FILE 20
04A6  21C504          LXI  H,DPTAB     ;BLOCK TRANSFERS            FILE 20
04A9  0E08            MVI  C,NPNDG                                 FILE 20
                ;                                                  FILE 20
04AB            DP010 EQU  $                                       FILE 20
04AB  0F              RRC            ;TRANSFER PENDING BIT SET?    FILE 20
04AC  DAC104          JC   DP020     ;YES - GO DO TRANSFER         FILE 20
04AF  23              INX  H         ;NO - CHECK NEXT BIT          FILE 20
04B0  23              INX  H         ;INCREMENT FUNCTION TABLE AD  FILE 20
04B1  0D              DCR  C         ;ALL BITS CHECKED?            FILE 20
04B2  C2AB04          JNZ  DP010     ;NO - CONTINUE CHECKING       FILE 20
                ;                                                  FILE 20
04B5  3A6FFF          LDA  MLGS2     ;YES - CHECK 2ND SET OF FLAG  FILE 20
04B8  0F              RRC            ;DEVICE RECORD PENDING?       FILE 20
04B9  DA2328          JC   IRDGO     ;YES - SEND I/O RECORD        FILE 20
04BC  0F              RRC            ;BIN DATA PENDING             FILE 20
04BD  DA2928          JC   BRYGO     ;YES TRANSMIT  DATA           FILE 20
```

```
04C0   C9              RET            ;NO - RETURN                        FILE 20
                ;*********************************************            FILE 20
                ; PENDING BIT FOUND - GO TO TRANSMIT FUNCTION *            FILE 20
                ;*********************************************            FILE 20
04C1            DP020  EQU  $                                              FILE 20
04C1   CD6A17          CALL CHAIN     ;GET TRANSMIT FUNCTION ADDR         FILE 20
04C4   E9              PCHL           ;GO TO THE FUNCTION                 FILE 20
                ;                                                          FILE 20
04C5            DPTAB  EQU  $                                              FILE 20
04C5   9D11            DW   DC2GO     ;SEND DC2                           FILE 20
04C7   2D0D            DW   SATGO     ;SEND TERMINAL STATUS               FILE 20
04C9   6123            DW   SA2GO     ;SEND TERMINAL STATUS 2             FILE 20
04CB   1D28            DW   ISTGO     ;SEND I/O STATUS                    FILE 20
04CD   5911            DW   CSNGO     ;SEND CURSOR ADDRESS                FILE 20
04CF   C613            DW   FEYGO     ;SEND FUNCTION KEY DATA             FILE 20
04D1   B012            DW   DPSGO     ;SEND DISPLAY DATA                  FILE 20
04D3   2028            DW   IDNGO     ;SEND I/O TERMINATION CODE          FILE 20
                ;                                                          FILE 20
0008            NPNDG  EQU  ($-DPTAB)/2                                    FILE 20
                ;                                                          FILE 20
                ;*****************************                             FILE 20
                ; ESCAPE CHARACTER PROCESSING *                             FILE 20
                ;*****************************                             FILE 20
04D5            ECAPE  EQU $                                               FILE 20
04D5   3A6EFF          LDA  DFLGS                                          FILE 20
04D8   E601            ANI  SACOM     ;DATA FROM DATACOM?                 FILE 20
04DA   CAE704          JZ   EC010     ;NO - DON'T LOCK KEYBOARD           FILE 20
04DD   3AF3FF          LDA  MFLG2     ;YES - GET MODE FLAGS               FILE 20
04E0   E602            ANI  BKMDE     ;BLOCK MODE?                        FILE 20
04E2   3E08            MVI  A,ECINP     ;(PUT IGNORE FLAG IN A-REG        FILE 20
04E4   C49516          CNZ  STMF2     ;YES - SET IGNORE KEYBD FLAG        FILE 20
04E7            EC010  EQU  $                                              FILE 20
04E7   CD8917          CALL CKSFK     ;SOFT KEY MODE?                     FILE 20
04EA   21E923          LXI  H,ECTAB     ;(SET FOR NORMAL ESC TABLE        FILE 20
04ED   CAF504          JZ   ECAPO     ;NO - SET RANGE TABLE               FILE 20
04F0   21D523          LXI  H,SSCTB   ;YES - USE SOFT KEY TABLE           FILE 20
                ;**********************************************           FILE 20
                ; ESCAPO - SET RANGE TABLE FOR ESCAPE SEQUENCE *           FILE 20
                ;**********************************************           FILE 20
                ;                                                          FILE 20
                ;  ENTRY:  A = RADIX (BASE) FOR DIGIT PARAMETERS           FILE 20
                ;          H,L = ADDRESS OF NEW RANGE TABLE                FILE 20
                ;                                                          FILE 20
                ;  EXIT :  H,L = ESCFLG                                    FILE 20
                ;                                                          FILE 20
                ;  ESCAPA - USE DECIMAL RADIX                              FILE 20
                ;                                                          FILE 20
04F3            ECAPA  EQU  $                                              FILE 20
04F3   3E0A            MVI  A,DCRDX   ;SET RADIX FOR BASE 10 DIGIT        FILE 20
04F5            ECAPO  EQU  $                                              FILE 20
04F5   32D4FF          STA  RADIX     ;SET PARAMETER RADIX                FILE 20
04F8   22D2FF          SHLD RNGTA     ;SET NEW RANGE TABLE                FILE 20
04FB            ECAPB  EQU  $         ;ENTRY TO CLEAR ACCUMULATOR         FILE 20
04FB   21DDFF          LXI  H,ICSGN   ;CLEAR OUT THE PARAMETER            FILE 20
04FE   1E03            MVI  E,3         ;ACCUMULATOR AREA                 FILE 20
0500   CD7410          CALL CRAL1                                          FILE 20
0503            ECAP1  EQU  $                                              FILE 20
0503   21D1FF          LXI  H,ECFLG   ;SET FLAG TO RESET AFTER            FILE 20
0506   3602            MVI  M,2         ;FOLLOWING CHARACTER              FILE 20
0508   C9              RET            ;RETURN                             FILE 20
```

```
                 ;                                                   FILE 20
                 ;*******************************************        FILE 20
                 ; ESCEND - END OF ESCAPE SEQUENCE PROCESSING *      FILE 20
                 ;*******************************************        FILE 20
0509             ECEND  EQU  $                                       FILE 20
0509   21B323           LXI  H,RABLE    ;SET FOR NORMAL RANGE TABLE  FILE 20
050C   CD8917           CALL CKSFK      ;SOFT KEY MODE?              FILE 20
050F   CA1505           JZ   ECEN1      ;NO - USE NORMAL TABLE       FILE 20
0512   21AF23           LXI  H,DSTB0    ;YES - USE SOFT KEY TABLE    FILE 20
0515             ECEN1  EQU  $                                       FILE 20
0515   22D2FF           SHLD RNGTA      ;RESET RANGE TABLE POINTER   FILE 20
0518   AF               XRA  A          ;CLEAR ESCAPE FLAG AND       FILE 20
0519   32D1FF           STA  ECFLG        ;ESCAPE KEYBOARD LOCKOUT   FILE 20
051C   3EF7             MVI  A,377Q-ECINP   ;FLAG                    FILE 20
                 ;*********************************                  FILE 20
                 ; CLRMF2 - CLEAR FLAG BIT IN MFLGS2 *               FILE 20
                 ;*********************************                  FILE 20
                 ;                                                   FILE 20
                 ;  ENTRY:  A = 377B - FLAG BIT TO BE CLEARED        FILE 20
                 ;                                                   FILE 20
                 ;  EXIT :  A = UPDATED MFLGS2 VALUE                 FILE 20
                 ;          H,L = MFLGS2                             FILE 20
                 ;                                                   FILE 20
051E             CRMF2  EQU  $                                       FILE 20
051E   216FFF           LXI  H,MLGS2                                 FILE 20
0521   A6               ANA  M          ;CLEAR THE FLAG BIT          FILE 20
0522   77               MOV  M,A        ;STORE NEW SETTINGS          FILE 20
0523   C9               RET             ;RETURN                      FILE 20
                 ;                                                   FILE 20
                 ;                                                   FILE 20
                 ; * * * * * * * * * * * * * * * * * * * * * * * * * FILE 20
                 ;                                                   FILE 20
                 ;  FNDRAM - LOCATE END OF RAM SPACE                 FILE 20
                 ;                                                   FILE 20
                 ;      ENTRY:  B = MSB OF RAM SPACE LOWER LIMIT     FILE 20
                 ;              H,L = ADDR OF UPPER BOUNDARY         FILE 20
                 ;                                                   FILE 20
                 ;      EXIT :  H,L = ADDRESS OF LOWER BOUNDARY      FILE 20
                 ;              A DESTROYED                          FILE 20
                 ;                                                   FILE 20
0524             FDRAM  EQU  $                                       FILE 20
0524   AF               XRA  A                                       FILE 20
0525   6F               MOV  L,A        ;SET ADDRESS'S LSB TO ZERO   FILE 20
0526   77               MOV  M,A        ;SET RAM LOCATION TO ZERO    FILE 20
0527   BE               CMP  M          ;ALL ZEROES STORED?          FILE 20
0528   C23805           JNZ  FM010      ;NO - RAM LIMIT FOUND        FILE 20
052B   35               DCR  M          ;YES - TRY TO SET TO ALL ONE FILE 20
052C   34               INR  M          ;ALL ONES STORED?            FILE 20
052D   C23805           JNZ  FM010      ;NO - RAM LIMIT FOUND        FILE 20
0530   7C               MOV  A,H        ;YES - MOVE TO NEXT 1K       FILE 20
0531   D604             SUI  4                                       FILE 20
0533   67               MOV  H,A                                     FILE 20
0534   B8               CMP  B          ;RAM LIMIT REACHED?          FILE 20
0535   F22405           JP   FDRAM      ;NO - TRY NEXT 1K            FILE 20
                 ;                                                   FILE 20
                 ;  RAM LIMIT FOUND - RETURN LOW BOUNDARY            FILE 20
                 ;                                                   FILE 20
0538             FM010  EQU $                                        FILE 20
0538   7C               MOV  A,H        ;ADJUST H,L TO TRUE LOWER    FILE 20
0539   C604             ADI  4            ;BOUNDARY                  FILE 20
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053B   E6FC            ANI  374Q       ;MASK FOR 1K START ADDRESS      FILE 20
053D   67              MOV  H,A                                        FILE 20
053E   C9              RET             ;RETURN                         FILE 20
                ;                                                      FILE 20
                ;                                                      FILE 20
                ; * * * * * * * * * * * * * * * * * * * * * * * *      FILE 20
                ;                                                      FILE 20
                ;  GETBUF - GET BUFFER SPACE                           FILE 20
                ;                                                      FILE 20
                ;      ENTRY:  B,C = LENGTH OF BUFFER REQUIRED         FILE 20
                ;                                                      FILE 20
                ;      EXIT :  A,H,L DESTROYED                         FILE 20
                ;              P - BUFFER SPACE ALLOCATAED             FILE 20
                ;                D,E = BUFFER START ADDRESS            FILE 20
                ;              M - BUFFER SPACE NOT ALLOCATED          FILE 20
                ;                D,E DESTROYED                         FILE 20
                ;                                                      FILE 20
                ;  THIS ROUTINE ALLOCATES A CONTIGUOUS AREA OF         FILE 20
                ;    RAM.  THE BUFFER SPACE MAY NOT START ON A         FILE 20
                ;    256 BYTE PAGE BOUNDARY.                           FILE 20
                ;                                                      FILE 20
053F            GTBUF  EQU $                                           FILE 20
053F   2A8BFF          LHLD BFEND      ;GET CURRENT BUFFER END AND     FILE 20
0542   118EFF          LXI  D,BFBGN+1    ;ADDRESS OF BEGIN PTR'S MS    FILE 20
0545   CD6605          CALL GB100      ;ENOUGH SPACE?                  FILE 20
0548   FA5105          JM   GB010      ;NO - TRY DISPLAY AREA          FILE 20
054B   228BFF          SHLD BFEND      ;YES - STORE NEW BUFFER END     FILE 20
054E            GB005  EQU  $                                          FILE 20
054E   EB              XCHG            ;SET D,E TO LOW ADDRESS         FILE 20
054F   13              INX  D            ;OF BUFFER                    FILE 20
0550   C9              RET             ;RETURN                         FILE 20
                ;                                                      FILE 20
                ;  NOT ENOUGH NON-DISPLAY RAM - TRY DISPLAY AREA       FILE 20
                ;                                                      FILE 20
0551            GB010  EQU  $                                          FILE 20
0551   2AA8FF          LHLD DPEND      ;GET CURRENT DISPLAY END AND    FILE 20
0554   11ABFF          LXI  D,DPBGN+1    ;ADDR OF BEGIN PTR'S MSB      FILE 20
0557   CD6605          CALL GB100      ;ENOUGH SPACE?                  FILE 20
055A   22A8FF          SHLD DPEND        ;(STORE NEW DISPLAY END)      FILE 20
055D   F24E05          JP   GB005      ;YES - RETURN BUFFER ADDRESS    FILE 20
0560   215F0E          LXI  H,BFMSG    ;NO - REPORT ERROR              FILE 20
0563   C3C911          JMP  HNGU0                                      FILE 20
                ;                                                      FILE 20
                ;  GTB100 - CHECK FOR AVAILABLE SPACE                  FILE 20
                ;                                                      FILE 20
0566            GB100  EQU  $                                          FILE 20
0566   7D              MOV  A,L        ;SUBTRACT DESIRED SPACE         FILE 20
0567   91              SUB  C            ;FROM END OF REGION           FILE 20
0568   6F              MOV  L,A                                        FILE 20
0569   7C              MOV  A,H                                        FILE 20
056A   98              SBB  B                                          FILE 20
056B   67              MOV  H,A                                        FILE 20
056C   EB              XCHG            ;COMPARE NEW MSB OF END TO      FILE 20
056D   BE              CMP  M            ;MSB OF BEGINNING             FILE 20
056E   EB              XCHG            ;PUT NEW END ADDRESS IN H,L     FILE 20
056F   C9              RET             ;RETURN (P = ENOUGH)            FILE 20
                ;                                                      FILE 20
                ;*****************************************             FILE 20
                ; GETDCM - PROCESS DATA COMM INPUT IF ANY *            FILE 20
                ;*****************************************             FILE 20
```

```
                                                                     FILE 20
                                                                     FILE 20
                                                                     FILE 20
                                                                     FILE 20
                                                                     FILE 20
                          ;                                          FILE 20
                          ;  ENTRY:  DON'T CARE                      FILE 20
                          ;                                          FILE 20
                          ;  EXIT :  NC                              FILE 20
                          ;          NZ - DATA COMM INPUT BUFFER EMPTY   FILE 20
                          ;          Z - EXIT ON FULL INPUT PROCESSING   FILE 20
                          ;          ALL REGISTERS DESTROYED         FILE 20
                          ;                                          FILE 20
0570                      GTDCM  EQU  $                              FILE 20
0570    3AF3FF                   LDA  MFLG2      ;GET HARD MODE FLAGS    FILE 20
0573    E608                     ANI  RMOTE      ;REMOTE MODE ENABLED?   FILE 20
0575    3AF8FF                   LDA  CFLGS        ;(GET COMMON FLAGS)   FILE 20
0578    CAB805                   JZ   GC100      ;NO - IGNORE DATA COMM  FILE 20
057B    E610                     ANI  RMSET      ;WAS REMOTE ON BEFORE?  FILE 20
057D    CC5713                   CZ   ETREM      ;NO - SET REMOTE MODE   FILE 20
                          ;*********************                     FILE 20
                          ; GET DATA COMM INPUT *                     FILE 20
                          ;*********************                     FILE 20
0580                      GC010  EQU  $                              FILE 20
0580    CD1778                   CALL ZETDC      ;ANY DATA COMM INPUT?   FILE 20
0583    DAAA05                   JC   GC050        ;(PROCESS ERROR IF ANY)   FILE 20
0586    C0                       RNZ             ;NO - RETURN        FILE 20
0587    4F                       MOV  C,A        ;YES - SAVE INPUT INTO C-REG   FILE 20
                          ;*************************                 FILE 20
                          ; PROCESS DATA COMM INPUT *                 FILE 20
                          ;*************************                 FILE 20
0588                      GC020  EQU  $                              FILE 20
0588    CD6B16                   CALL STDF0      ;SET DATA COMM INPUT FLAG   FILE 20
058B    3AF4FF                   LDA  MFLG1      ;GET SOFT MODE FLAGS    FILE 20
058E    E640                     ANI  RCORD      ;RECORD MODE ENABLED?   FILE 20
0590    C39E05                   JMP  GC030      ;NO - PROCESS THE INPUT   FILE 20
                          ;                                          FILE 20
                          ;                                          FILE 20
0593    79                       MOV  A,C        ;YES - LOOK FOR RECORD TRIGG   FILE 20
0594    FE0D                     CPI  CR         ;INPUT = RETURN?    FILE 20
0596    CA9E05                   JZ   GC030      ;YES - PROCESS THE CHARACTER   FILE 20
0599    FE0A                     CPI  LF         ;IS IT LINE FEED?   FILE 20
059B    C22628                   JNZ  RRDGO      ;NO - EXECUTE RECORD FUNCTIO   FILE 20
                          ;                                          FILE 20
                          ;                                          FILE 20
059E                      GC030  EQU  $          ;YES - PROCESS THE CHARACTER   FILE 20
059E    CDC403                   CALL CHINT      ;PERFORM INPUT PROCEDURE   FILE 20
05A1    CA8005                   JZ   GC010      ;FAST STORE - DO SHORT LOOP   FILE 20
                          ;                                          FILE 20
05A4                      GTDC1  EQU  $          ;SET THE DISPLAY CURSOR   FILE 20
05A4    CD1D0F                   CALL DSLN1      ;SET DISPLAY CURSOR ROW AND   FILE 20
05A7    C31404                   JMP  CINT2        ;COLUMN AND EXIT Z-TRUE   FILE 20
                          ;                                          FILE 20
                          ;*******************************           FILE 20
                          ; PROCESS DATA COMM INPUT ERROR *           FILE 20
                          ;*******************************           FILE 20
05AA                      GC050  EQU  $                              FILE 20
05AA    C2C911                   JNZ  HNGU0      ;REPORT AND HANG IF FATAL   FILE 20
05AD    CDBC0F                   CALL CDSPF      ;DISPLAY FUNCTIONS ENABLED?   FILE 20
05B0    CC0905                   CZ   ECEND      ;NO - FORCE ESC SEQ ABORT   FILE 20
05B3    0E7F                     MVI  C,ADEL     ;FORCE RUBOUT CHARACTER TO   FILE 20
05B5    C38805                   JMP  GC020        ;BE DISPLAYED     FILE 20
                          ;*****************************************  FILE 20
                          ; NOT IN REMOTE MODE - SET TO LOCAL IF NOT *  FILE 20
                          ;   IN LOCAL MODE ALREADY                 *  FILE 20
```

```
                           FILE 20
                           FILE 20
                           FILE 20
                           FILE 20
                           FILE 20
                ;*******************************************  FILE 20
05B8            GC100  EQU  $                                  FILE 20
05B8   E610            ANI  RMSET      ;FIRST TIME IN LOCAL?   FILE 20
05BA   C43C13          CNZ  ETLCL      ;YES - SET TO LOCAL MODE  FILE 20
05BD   3C              INR  A          ;FORCE Z FALSE          FILE 20
05BE   C9              RET             ;RETURN NO DATA COMM INPUT  FILE 20
                ;                                              FILE 20
                ;*********************************             FILE 20
                ; GTBLK - GET A NEW DISPLAY BLOCK *            FILE 20
                ;*********************************             FILE 20
                ;                                              FILE 20
                ;  ENTRY:  DON'T CARE                          FILE 20
                ;                                              FILE 20
                ;  EXIT :  Z - NO BLOCKS AVAILABLE (MEMORY LOCKED)  FILE 20
                ;            ALL REGISTERS DESTROYED           FILE 20
                ;          NZ - BLOCK ALLOCATED                FILE 20
                ;            B,A = H,L = ADDRESS OF CHARACTER  FILE 20
                ;              PRECEDING NEXT BLOCK LINK IN BLOCK  FILE 20
                ;            C,D,E DESTROYED                   FILE 20
                ;                                              FILE 20
05BF            GBLKF  EQU  $          ;GET BLOCK FOR SINGLE CHAR I  FILE 20
05BF   CDBB14          CALL FC200                              FILE 20
05C2   3EC3            MVI  A,FILL     ;SET FILL CHARACTER TO FILL  FILE 20
                ;                                              FILE 20
05C4            GTBLK  EQU  $                                  FILE 20
05C4   328FFF          STA  FLCHR      ;SAVE FILL CHARACTER    FILE 20
05C7   2AACFF          LHLD FBLKS      ;GET POINTER TO FIRST   FILE 20
05CA   EB              XCHG              ;FREE BLOCK IN D,E    FILE 20
05CB   7B              MOV  A,E        ;PUT LSB OF LINK IN A-REG  FILE 20
05CC   B7              ORA  A          ;ANY BLOCKS AVAILABLE?  FILE 20
05CD   CC8E06          CZ   PTBLK      ;NO - RELEASE BLOCKS    FILE 20
05D0   CA0E06          JZ   GL220        ;AND FORCE MEMORY LOCK ON  FILE 20
05D3   E6F0            ANI  377Q-BLKSM ;COMPUTE ADDRESS OF     FILE 20
05D5   6F              MOV  L,A            ;NEXT BLOCK LINK    FILE 20
05D6   62              MOV  H,D                                FILE 20
05D7   7E              MOV  A,M        ;GET LSB OF NEXT BLOCK LINK  FILE 20
05D8   4F              MOV  C,A        ;SAVE LSB IN C-REGISTER  FILE 20
05D9   2F              CMA             ;END OF LINE LINK (LOWER  FILE 20
05DA   E60F            ANI  BLKSM        ;FOUR BITS # ALL ONES)?  FILE 20
05DC   CAED05          JZ   GL100      ;NO - RELEASE NEXT BLOCK  FILE 20
                ;****************************                  FILE 20
                ; RELEASE LAST BLOCK OF LINE *                 FILE 20
                ;****************************                  FILE 20
05DF   13              INX  D          ;SET H,L TO LSB PART OF PREV  FILE 20
05E0   13              INX  D            ;LINE LINK            FILE 20
05E1   6B              MOV  L,E                                FILE 20
05E2   CD6A17          CALL CHAIN      ;GET PREV LINE ADDR IN H,L  FILE 20
05E5   22ACFF          SHLD FBLKS      ;SET AS NEW FREE BLOCKS HEAD  FILE 20
05E8   42              MOV  B,D        ;PUT CURRENT BLOCK ADDRESS  FILE 20
05E9   7B              MOV  A,E          ;IN B,A               FILE 20
05EA   C3FB05          JMP  GL200      ;FILL BLOCK WITH FILL CHARS  FILE 20
                ;                                              FILE 20
                ;****************************                  FILE 20
                ; RELEASE NEXT BLOCK OF LINE *                 FILE 20
                ;****************************                  FILE 20
05ED            GL100  EQU  $                                  FILE 20
05ED   23              INX  H          ;GET MSB OF NEXT BLOCK LINK  FILE 20
05EE   46              MOV  B,M                                FILE 20
05EF   2B              DCX  H          ;RESTORE H,L TO ADDRESS OF  FILE 20
                ;                OF LSB PART IN FIRST BLOCK    FILE 20
```

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                                                                FILE 20
                                                                FILE 20
                                                                FILE 20
                                                                FILE 20
                                                                FILE 20
05F0   79              MOV  A,C       ;COMPUTE ADDRESS OF NEXT  FILE 20
05F1   E6F0            ANI  377Q-BLKSM  ;BLOCK LINK IN SECOND BLOC  FILE 20
05F3   4F              MOV  C,A                                 FILE 20
05F4   0A              LDAX B         ;TRANSFER NEXT BLOCK LINK OF  FILE 20
05F5   77              MOV  M,A         ;SECOND BLOCK TO NEXT BLOC  FILE 20
05F6   03              INX  B           ;LINK IN FIRST BLOCK    FILE 20
05F7   23              INX  H                                   FILE 20
05F8   0A              LDAX B                                   FILE 20
05F9   77              MOV  M,A                                 FILE 20
05FA   79              MOV  A,C       ;SET A-REGISTER FOR "BLNKFL"  FILE 20
                ;*****************************************      FILE 20
                ; FILL BLOCK WITH SPECIFIED FILL CHARACTER *    FILE 20
                ;*****************************************      FILE 20
                ;                                               FILE 20
                ;  B,A = ANY ADDRESS IN BLOCK                   FILE 20
                ;  FILCHR = CHARACTER TO FILL BLOCK WITH        FILE 20
                ;                                               FILE 20
05FB            GL200  EQU  $                                   FILE 20
05FB   F60F            ORI  BLKSM     ;SET H,L TO ADDRESS OF LAST  FILE 20
05FD   6F              MOV  L,A         ;DISPLAY CHARACTER POSITIO  FILE 20
05FE   60              MOV  H,B         ;IN BLOCK               FILE 20
05FF   0E0D            MVI  C,BLKSZ-3  ;SET FILL COUNT          FILE 20
0601   3A8FFF          LDA  FLCHR     ;GET THE FILL CHARACTER   FILE 20
0604            GL210  EQU  $                                   FILE 20
0604   77              MOV  M,A       ;STORE THE FILL CHARACTER  FILE 20
0605   2B              DCX  H         ;MOVE TO NEXT BYTE        FILE 20
0606   0D              DCR  C         ;BLOCK FILL COMPLETED?    FILE 20
0607   C20406          JNZ  GL210     ;NO - CONTINUE FILLING    FILE 20
060A   77              MOV  M,A       ;YES - WRITE LAST PAD     FILE 20
060B   7D              MOV  A,L       ;SET B,A TO EXIT ADDRESS  FILE 20
060C   B7              ORA  A         ;SET NZ                   FILE 20
060D   C9              RET            ;RETURN                   FILE 20
060E            GL220  EQU  $                                   FILE 20
060E   AF              XRA  A                                   FILE 20
060F   C3630B          JMP  MLOCK                               FILE 20
                ;                                               FILE 20
                ;****************************                   FILE 20
                ; GTNWLN - START A NEW LINE *                   FILE 20
                ;****************************                   FILE 20
                ;                                               FILE 20
                ;  ENTRY:  LLINE = ADDRESS OF PREVIOUS LINE     FILE 20
                ;                                               FILE 20
                ;  EXIT :  NZ - NO BLOCKS AVAILABLE (MEMORY LOCK)  FILE 20
                ;            ALL REGISTERS DESTROYED            FILE 20
                ;          Z - LINE ALLOCATED                   FILE 20
                ;            H,L = ADDR OF FIRST CHAR IN NEW LINE  FILE 20
                ;            LLINE = ADDR OF LSB PART OF NEXT LINE  FILE 20
                ;              POINTER IN THE NEW LINE          FILE 20
                ;            A-E DESTROYED                      FILE 20
                ;                                               FILE 20
                ;  NEW LINE IS LINKED TO PREVIOUS LINE IF PREVIOUS  FILE 20
                ;  LINE EXISTS (I.E., LSB OF PREV LINE ADDR # 0)  FILE 20
                ;                                               FILE 20
0612            GNWLN  EQU  $                                   FILE 20
0612   3EC0            MVI  A,STPR    ;SET LAST FORMAT CONTROL COD  FILE 20
0614   32C5FF          STA  LTFMT       ;TO START PROTECT       FILE 20
0617   CDBF05          CALL GBLKF     ;GET A BLOCK FROM FREE LIST  FILE 20
061A   CA590B          JZ   NEXIT     ;RETURN NZ IF NO BLOCKS   FILE 20
061D   EB              XCHG           ;D,E = NEW BLOCK ADDRESS  FILE 20
061E   2AA1FF          LHLD LLINE     ;GET ADDRESS OF PREVIOUS  FILE 20
```

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                                                                               FILE 20
8080 MACRO ASSEMBLER, VER 2.4           ERRORS = 0 PAGE 37                     FILE 20
                                                                               FILE 20
                                                                               FILE 20
                                                                               FILE 20
0621   EB               XCHG             ;LINE IN D,E                          FILE 20
0622   F60F             ORI   BLKSM     ;COMPUTE ADDRESS OF LSB PART           FILE 20
0624   D602             SUI   2           ;OF NEXT LINE LINK                   FILE 20
0626   2B               DCX   H         ;STORE ADDRESS INTO NEXT               FILE 20
0627   70               MOV   M,B         ;BLOCK LINK                          FILE 20
0628   2D               DCR   L           ;(USE DCR TO AVOID CARRY)            FILE 20
0629   77               MOV   M,A                                              FILE 20
062A   C602             ADI   2         ;SET ADDRESS TO MSB PART OF            FILE 20
062C   6F               MOV   L,A         ;PREVIOUS LINE LINK                  FILE 20
062D   72               MOV   M,D       ;SET PREVIOUS LINE LINK TO             FILE 20
062E   2B               DCX   H           ;POINT TO OLD LINE                   FILE 20
062F   73               MOV   M,E                                              FILE 20
0630   2B               DCX   H                                                FILE 20
0631   36CE             MVI   M,EOP     ;SET NEXT LINE LINK TO "EOP"           FILE 20
0633   2B               DCX   H                                                FILE 20
0634   AF               XRA   A         ;SET TERMINATOR (LSB = 0)              FILE 20
0635   77               MOV   M,A                                              FILE 20
0636   22A1FF           SHLD LLINE      ;STORE NEW LAST LINE ADDRESS           FILE 20
0639   2B               DCX   H                                                FILE 20
063A   CD9C0D           CALL SCHR1      ;SET FIRST DISPLAY CHARACTER           FILE 20
                ;                                                              FILE 20
                ;******************************************                    FILE 20
                ; LINK NEW LINE BACK TO PREVIOUS LAST LINE *                   FILE 20
                ;******************************************                    FILE 20
063D   B3               ORA   E         ;PREVIOUS LINE EXIST (LSB#0)           FILE 20
063E   C8               RZ              ;NO - RETURN                           FILE 20
063F   EB               XCHG            ;YES - LINK NEW LINE TO                FILE 20
0640   73               MOV   M,E         ;PREVIOUS LINE                       FILE 20
0641   23               INX   H                                                FILE 20
0642   72               MOV   M,D                                              FILE 20
0643   EB               XCHG            ;RESTORE H,L                           FILE 20
0644   BF               CMP   A         ;SET Z TRUE                            FILE 20
0645   C9               RET             ;RETURN                                FILE 20
                ;                                                              FILE 20
                ;****************************************                      FILE 20
                ; INITDS - SET UP INITIAL DISPLAY VALUES *                     FILE 20
                ;****************************************                      FILE 20
                ;                                                              FILE 20
                ;  EXIT :  H,L = ADDRESS OF THE LSB PART OF THE                FILE 20
                ;                NEXT LINE POINTER IN THE INITIAL              FILE 20
                ;                DISPLAY BLOCK                                 FILE 20
                ;              A DESTROYED                                     FILE 20
                ;                                                              FILE 20
                ;  THIS ROUTINE ALLOCATES THE INITIAL LINE OF                  FILE 20
                ;  THE DISPLAY AND INITIALIZES THE DISPLAY                     FILE 20
                ;  PARAMETERS:                                                 FILE 20
                ;                                                              FILE 20
                ;    DISPST,CURADR =  ADDRESS OF THE FIRST DISPLAY             FILE 20
                ;      CHARACTER IN THE INITIAL DISPLAY BLOCK                  FILE 20
                ;                                                              FILE 20
                ;    LSTLIN,FLINE,TOPLIN =  ADDRESS OF THE LSB                 FILE 20
                ;      PART OF THE NEXT LINE POINTER IN THE                    FILE 20
                ;      INITIAL DISPLAY BLOCK                                   FILE 20
                ;                                                              FILE 20
                ;    RHTMGN = MAXCOL (= 79)                                    FILE 20
                ;                                                              FILE 20
0646            IITDS   EQU  $                                                 FILE 20
0646   CD1206           CALL GNWLN      ;GET INITIAL DISPLAY BLOCK             FILE 20
0649   22FEFF           SHLD DSPST      ;SET THE DISPLAY POINTER               FILE 20
064C   22C3FF           SHLD CRADR        ;AND THE CURRENT CHAR ADDR           FILE 20
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064F   23               INX  H                                             FILE 20
0650   22C9FF           SHLD LTLIN      ;SET THE CURRENT LINE              FILE 20
0653   229FFF           SHLD FLINE        ;PARAMETERS                      FILE 20
0656   22CBFF           SHLD TPLIN                                         FILE 20
0659   3E4F             MVI  A,MXCOL    ;INITIALIZE THE RIGHT MARGIN       FILE 20
065B   32BEFF           STA  RTMGN        ;TO THE LAST COLUMN              FILE 20
065E   C9               RET             ;RETURN                            FILE 20
                 ;                                                         FILE 20
                 ;***********************************                      FILE 20
                 ; LOCLIN - PROCESS LOCAL DATA ENTRY *                      FILE 20
                 ;***********************************                      FILE 20
                 ;                                                         FILE 20
                 ;  ENTRY:  C = INPUT CHARACTER                            FILE 20
                 ;          (CHARIN) = KEYBOARD INPUT CODE                 FILE 20
                 ;                                                         FILE 20
                 ;  EXIT :  ALL REGISTERS DESTROYED                        FILE 20
                 ;                                                         FILE 20
                 ;  THIS ROUTINE PROCESSES INPUT CHARACTERS FROM           FILE 20
                 ;  KEYBOARD.  THE ROUTINE DETERMINES WHETHER OR           FILE 20
                 ;  NOT THE CHARACTER SHOULD BE TRANSMITTED OR             FILE 20
                 ;  PROCESSED LOCALLY                                      FILE 20
                 ;                                                         FILE 20
                 ;  LOCLIO - PROCESS FUNCTIONAL KEY INPUT                  FILE 20
                 ;                                                         FILE 20
065F             LCLIO  EQU  $                                             FILE 20
065F   3AFBFF           LDA  KJMPR      ;GET KEYBOARD JUMPERS A-H          FILE 20
0662   E601             ANI  CNDIS      ;DISPLAY ALL FUNCTIONS OR          FILE 20
0664   CCBC0F           CZ   CDSPF        ;DISPLAY FUNCTIONS ENABLED       FILE 20
0667   CA8506           JZ   LI050      ;NO - PROCESS LOCALLY ONLY         FILE 20
                 ;*****************************************                FILE 20
                 ; TRANSMIT CODE IF IN REMOTE CHARACTER MODE *              FILE 20
                 ;*****************************************                FILE 20
066A             LCLIN  EQU  $                                             FILE 20
066A   CD8917           CALL CKSFK      ;SOFT KEY DEFINE MODE?             FILE 20
066D   C28506           JNZ  LI050      ;YES - PROCESS LOCALLY ONLY        FILE 20
0670   3AF3FF           LDA  MFLG2      ;NO - GET HARD MODE FLAGS          FILE 20
0673   E60A             ANI  RMOTE+BKMDE                                   FILE 20
0675   EE08             XRI  RMOTE      ;REMOTE AND NOT BLOCK MODE?        FILE 20
0677   C28506           JNZ  LI050      ;NO - PROCESS LOCALLY ONLY         FILE 20
                 ;                                                         FILE 20
                 ;                                                         FILE 20
067A   79               MOV  A,C        ;YES - RECALL THE INPUT            FILE 20
067B   CD0817           CALL XUTDC      ;OUTPUT THE CHARACTER              FILE 20
067E   D8               RC                ;(RETURN IF OUTPUT ERROR)        FILE 20
067F   3AFCFF           LDA  KDCSW      ;GET THE DATA COMM SWITCHES        FILE 20
0682   E680             ANI  FLDUP      ;FULL DUPLEX?                      FILE 20
0684   C0               RNZ             ;YES - RETURN                      FILE 20
                 ;                       NO - PROCESS INPUT LOCALLY        FILE 20
                 ;**************************                               FILE 20
                 ; PROCESS THE INPUT LOCALLY *                              FILE 20
                 ;**************************                               FILE 20
                 ;                                                         FILE 20
                 ;  INPUT CHARACTER IN C-REGISTER                          FILE 20
                 ;                                                         FILE 20
0685             LI050  EQU  $                                             FILE 20
0685   CD7317           CALL CKFMS      ;FORMAT/SOFT KEY DEFINE MODE       FILE 20
0688   C22D04           JNZ  CINT1      ;YES - FORCE FULL PROCESSING       FILE 20
068B   C3C403           JMP  CHINT      ;NO - 1ST TRY FAST PROCESSIN       FILE 20
                 ;                                                         FILE 20
                 ;                                                         FILE 20
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                        ;RELEASE FIRST LINE OF MEMORY                           FILE 20
                        ;                                                       FILE 20
  068E                  PTBLK   EQU $                                           FILE 20
  068E     2ACBFF               LHLD TPLIN      ;GET TOP                        FILE 20
  0691     23                   INX  H          ;LINE ADRESS                    FILE 20
  0692     23                   INX  H          ;                               FILE 20
  0693     7E                   MOV  A,M        ;                               FILE 20
  0694     B7                   ORA  A          ;TOP LINE = FIRST LINE          FILE 20
  0695     C2AB06               JNZ  PB220      ;NO FIRST IS NOT TOP            FILE 20
                        ;***************************************                FILE 20
                        ; TOP LINE OF DISPLAY IS FIRST LINE                     FILE 20
                        ; OF MEMORY DOROLL UP                                   FILE 20
                        ;***************************************                FILE 20
  0698     21C0FF               LXI  H,CRROW                                    FILE 20
  069B     3A6BFF               LDA  MKROW      ;                               FILE 20
  069E     BE                   CMP  M          ;                               FILE 20
  069F     C45B0C               CNZ  RLLUP      ;ROLL UP DISPLAY                FILE 20
  06A2     21C0FF               LXI  H,CRROW    ;DECREMENT CURSOR               FILE 20
  06A5     46                   MOV  B,M        ;                               FILE 20
  06A6     05                   DCR  B          ;                               FILE 20
  06A7     FAAB06               JM   PB220      ;STORE IF                       FILE 20
  06AA     70                   MOV  M,B        ;ROW # 0                        FILE 20
                        ;***************************************                FILE 20
                        ;  ADVANVCE FRIST LINE PRINTER                          FILE 20
                        ;***************************************                FILE 20
  06AB                  PB220   EQU  $                                          FILE 20
  06AB     2A9FFF               LHLD FLINE                                      FILE 20
  06AE     EB                   XCHG                                            FILE 20
  06AF     CDC20F               CALL CEDIT      ;EDIT ENABLED                   FILE 20
  06B2     CAD406               JZ   PB400      ;NO                             FILE 20
                        ;***************************************                FILE 20
                        ; OUTPUT LINE                                           FILE 20
                        ;***************************************                FILE 20
  06B5     CD3228               CALL PTPLN                                      FILE 20
  06B8     DACD06               JC   PB350      ;OUTPUT FAIL RET.               FILE 20
  06BB                  PB225   EQU  $                                          FILE 20
  06BB     EB                   XCHG            ;ADRESS BACK INTO D-E           FILE 20
  06BC     5E                   MOV  E,M        ;GET ADR. OE                    FILE 20
  06BD     23                   INX  H          ;NEW FIRST                      FILE 20
  06BE     56                   MOV  D,M        ;LINE                           FILE 20
  06BF     13                   INX  D          ;                               FILE 20
  06C0     EB                   XCHG            ;SET TO NEX                     FILE 20
  06C1     229FFF               SHLD FLINE      ;LINE POINTER                   FILE 20
                        ;***************************************                FILE 20
                        ; CLEAR PREVIOUS LINE PTR IN NEW FIRST LINE             FILE 20
                        ;***************************************                FILE 20
  06C4     23                   INX  H          ;ADVANCE TO                     FILE 20
  06C5     23                   INX  H          ;PREVIOUS LINE POINT            FILE 20
  06C6     3600                 MVI  M,0        ;ZERO LSB TO FLAG               FILE 20
  06C8     1B                   DCX  D                                          FILE 20
                        ;                        AS TOP LINE                    FILE 20
                        ;                        SET D,E TO LSB OF              FILE 20
                        ;                        NEXT LINE POINTER              FILE 20
                        ;                        IN LINE TO BE RELEASED         FILE 20
  06C9                  PB300   EQU  $                                          FILE 20
  06C9     CDF206               CALL PTLIN      ;ADD LINE TO FREE LIST          FILE 20
  06CC     C9                   RET                                             FILE 20
                        ;X                                                      FILE 20
                        ;                                                       FILE 20
                        ;                                                       FILE 20
```

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                                                                    FILE 20
                                                                    FILE 20
                                                                    FILE 20
                                                                    FILE 20
                                                                    FILE 20
06CD                PB350   EQU   $           ;IO OUTPUT FAI        FILE 20
06CD    AF                  XRA   A           ;SET Z-FLAG           FILE 20
06CE    219AFF              LXI   H,NROWS     ;SET H TO DATA        FILE 20
06D1    77                  MOV   M,A         ;PAGE CLEAR NROWS     FILE 20
06D2    37                  STC                                     FILE 20
06D3    C9                  RET                                     FILE 20
                    ;****************************************      FILE 20
                    ; EDIT MODE NOT ENABLED                 *      FILE 20
                    ;****************************************      FILE 20
06D4                PB400   EQU   $                                 FILE 20
06D4    21CB0E              LXI   H,YMS01                           FILE 20
06D7    37                  STC                                     FILE 20
06D8    22F1FF              SHLD  MGPT1                             FILE 20
06DB    CD5C19              CALL  DPMSG       ;DISP MESSAGE         FILE 20
06DE                PB410   EQU   $                                 FILE 20
06DE    CD0570              CALL  ZETKY       ;GET KEY              FILE 20
06E1    C2DE06              JNZ   PB410       ;WAIT FOR KEY         FILE 20
06E4    FE0D                CPI   CR          ;IS IT RETURN         FILE 20
06E6    C2DE06              JNZ   PB410       ;LOOP                 FILE 20
                    ;                                               FILE 20
06E9    3E80                MVI   A,CTOFF                           FILE 20
06EB    322780              STA   ICRRW                             FILE 20
06EE    C7                  RST   RESET                             FILE 20
                    ;                                               FILE 20
06EF    C3CD06              JMP   PB350                             FILE 20
                    ;                                               FILE 20
                    ;********************************               FILE 20
                    ; PUTLIN - ADD LINE TO FREE LIST *               FILE 20
                    ;********************************               FILE 20
                    ;                                               FILE 20
                    ;  ENTRY:  D,E = ADDRESS OF NEXT LINE FIELD'S LSB   FILE 20
                    ;             OF LINE TO BE RELEASED             FILE 20
                    ;                                               FILE 20
                    ;  EXIT :  D,E UNCHANGED                        FILE 20
                    ;          A = E                                FILE 20
                    ;          Z FALSE                              FILE 20
                    ;          H,L DESTROYED                        FILE 20
                    ;          FREE BLOCKS LIST UPDATED TO INCLUDE  FILE 20
                    ;            RELEASE LINE                       FILE 20
                    ;                                               FILE 20
06F2                PTLIN   EQU   $                                 FILE 20
06F2    CD3510              CALL  MLKOF       ;RESET MEMORY LOCKED FLAG     FILE 20
06F5    2AACFF              LHLD  FBLKS       ;GET CURRENT FREE BLOCKS HEA  FILE 20
06F8    EB                  XCHG              ;SET H,L TO MSB PART OF NEXT  FILE 20
06F9    22ACFF              SHLD  FBLKS       ;SET FREE BLOCKS POINTER TO   FILE 20
06FC    7D                  MOV   A,L           ;RELEASED LINE              FILE 20
06FD    23                  INX   H           ;PUT PREVIOUS FREE BLOCKS     FILE 20
06FE    23                  INX   H             ;HEAD INTO PREVIOUS LINE    FILE 20
06FF    73                  MOV   M,E           ;POINTER OF RELEASED LINE   FILE 20
0700    2C                  INR   L             ;(USE INR TO FORCE NZ)      FILE 20
0701    72                  MOV   M,D                               FILE 20
0702    EB                  XCHG              ;RELEASED LINE ADDRESS IN D,  FILE 20
0703    5F                  MOV   E,A         ;SET A = E            FILE 20
0704    C9                  RET               ;RETURN               FILE 20
                    ;                                               FILE 20
                    ;*******************************************    FILE 20
                    ; RCADRA - LOCATE CURRENT CURSOR POSITION    *  FILE 20
                    ;   IF POSITION EXIST - DON'T EXTEND DISPLAY *  FILE 20
                    ;*******************************************    FILE 20
                    ;                                               FILE 20
```

```
                       ;  ENTRY:  DON'T CARE                                  FILE 20
                       ;                                                      FILE 20
                       ;  EXIT :  SEE "RCADDR"                                FILE 20
                       ;                                                      FILE 20
0705                   RADRA  EQU  $                                          FILE 20
0705    CD991C                CALL CADV1     ;CLEAR CURSOR ADVANCE FLAG       FILE 20
0708    3E01                  MVI  A,INTRM   ;SET TO IGNORE NON-DISPLAYIN     FILE 20
070A    326DFF                STA  TMFCT        ;TERMINATOR                   FILE 20
070D                   RADRB  EQU  $                                          FILE 20
070D    3EFF                  MVI  A,377Q    ;SET "BLKFIL" TO INHIBIT         FILE 20
070F    3291FF                STA  BKFIL        ;LINE EXTENSION               FILE 20
0712    C31907                JMP  RADR2     ;LOCATE CURSOR POSITION          FILE 20
                       ;*****************************************              FILE 20
                       ; LOCATE ADDR CORRESPONDING TO ROW/COLUMN *            FILE 20
                       ; DO NOT ADD ROWS IF ROW DOES NOT EXIST   *            FILE 20
                       ;*****************************************              FILE 20
0715                   RADR1  EQU  $                                          FILE 20
0715    AF                    XRA  A         ;SET TO LOCATE COLUMN 0          FILE 20
0716    32C1FF                STA  CRCOL        ;IN DESIRED ROW               FILE 20
0719                   RADR2  EQU  $                                          FILE 20
0719    3AC1FF                LDA  CRCOL     ;GET THE CURRENT COLUMN          FILE 20
071C                   RADR3  EQU  $                                          FILE 20
071C    219AFF                LXI  H,NROWS   ;SET "NROWS" TO INHIBIT          FILE 20
071F    36FF                  MVI  M,377Q       ;BUILDING OF NEW ROWS         FILE 20
0721    CD6C07                CALL RADR0     ;FIND CHARACTER ADDRESS          FILE 20
0724    219AFF                LXI  H,NROWS   ;RESET BUILD INHIBIT FLAGS       FILE 20
0727    3600                  MVI  M,0          ;WITHOUT CHANGING PROCESSO    FILE 20
0729    2E91                  MVI  L,BKFIL-BASE   ;FLAGS                      FILE 20
072B    3600                  MVI  M,0                                        FILE 20
072D    C9                    RET            ;RETURN                          FILE 20
                       ;                                                      FILE 20
                       ;***********************************************        FILE 20
                       ; RCADR4 - GET ADDRESS OF FIRST CHARACTER AFTER *       FILE 20
                       ;    AFTER PREVIOUS ROW AND COLUMN              *       FILE 20
                       ;***********************************************        FILE 20
                       ;                                                      FILE 20
                       ;       ENTRY:  CURROW = CURRENT ROW                   FILE 20
                       ;               CURCOL = CURRENT COLUMNN               FILE 20
                       ;                                                      FILE 20
                       ;       EXIT :  Z - CHARACTER FOUND                    FILE 20
                       ;                   C = COLUMN NUMBER                  FILE 20
                       ;                   D,E = CHARACTER ADDRESS            FILE 20
                       ;                   IF FORMAT MODE ENABLED             FILE 20
                       ;                     B = -1, CHARACTER PROTECTED      FILE 20
                       ;                       # -1, CHARACTER NOT PROTECTED  FILE 20
                       ;                   OTHERWISE, B DESTROYED             FILE 20
                       ;               A,H,L DESTROYED                        FILE 20
                       ;               NZ - CHARACTER NOT FOUND               FILE 20
                       ;                   ALL REGISTERS DESTROYED            FILE 20
                       ;                                                      FILE 20
072E                   RADR4  EQU $                                           FILE 20
072E    3AC1FF                LDA  CRCOL     ;GET CURRENT COLUMN NUMBER       FILE 20
0731    3D                    DCR  A         ;SET FOR PREVIOUS COLUMN         FILE 20
0732    CD1C07                CALL RADR3     ;DOES CHARACTER EXIST            FILE 20
0735    C0                    RNZ            ;NO - RETURN                     FILE 20
0736    4F                    MOV  C,A       ;YES - SAVE COLUMN FOUND IN      FILE 20
0737    0C                    INR  C         ;ADVANCE TO NEXT COLUMN          FILE 20
0738    CDBB0B                CALL NTCHR     ;GET NEXT CHARACTER              FILE 20
073B    CD7317                CALL CKFMS     ;FORMAT/SOFT KEY DEFINE MODE     FILE 20
073E    47                    MOV  B,A          ;(SET B TO INDICATE NOT       FILE 20
```

```
                        ;        E = NUMBER OF ROWS NEEDED                   FILE 20
                        ;      P - ROW LOCATED                               FILE 20
                        ;        A = COLUMN NUMBER FOUND                     FILE 20
                        ;        B = ROW NUMBER FOUND                        FILE 20
                        ;        C = NUMBER OF CHARACTERS NEEDED             FILE 20
                        ;      D,E = ADDRESS OF LAST CHARACTER FOUND         FILE 20
                        ;      H = BASEH                                     FILE 20
                        ;                                                    FILE 20
                        ;      LSTROW,LSTCOL,LSTLIN,CURADR ARE UPDATED       FILE 20
                        ;      TO THE LAST CHARACTER FOUND.                  FILE 20
                        ;                                                    FILE 20
0769                    RADDR  EQU  $                                        FILE 20
0769    3AC1FF                 LDA  CRCOL      ;GET DESIRED COLUMN NUMBER    FILE 20
076C                    RADRO  EQU  $                                        FILE 20
076C    3285FF                 STA  TPCOL      ;SAVE DESIRED COLUMN NUMBER   FILE 20
076F    3AC0FF                 LDA  CRROW      ;GET THE DESIRED ROW NUMBER   FILE 20
0772    2AC7FF                 LHLD LTROW      ;GET LAST ROW AND COLUMN DON  FILE 20
0775    44                     MOV  B,H        ;PUT LAST COLUMN IN B-REG     FILE 20
0776    95                     SUB  L          ;MOVED TO A NEW ROW?          FILE 20
0777    2AC9FF                 LHLD LTLIN        ;(GET LAST LINE DONE ADDR)  FILE 20
077A    CABF07                 JZ   RA240      ;YES - LOCATE COLUMN          FILE 20
                        ;**************************                          FILE 20
                        ; ROW HAS CHANGED         *                          FILE 20
                        ; LOCATE START OF NEW ROW *                          FILE 20
                        ;**************************                          FILE 20
077D    5F                     MOV E,A         ;SAVE COUNT                   FILE 20
077E    B7                     ORA A           ;SET FLAGS                    FILE 20
077F    F29607                 JP   RA140      ;ROW IS AHEAD OF THIS ROW     FILE 20
                        ;                                                    FILE 20
                        ;****************************                        FILE 20
                        ; ROW IS BEFORE CURRENT ROW *                        FILE 20
                        ; SEARCH BACK               *                        FILE 20
                        ;****************************                        FILE 20
0782                    RA120  EQU $                                         FILE 20
0782    23                     INX  H           ;SET ADDRESS TO PREVIOUS     FILE 20
0783    23                     INX  H             ;LINE POINTER              FILE 20
0784    CD6A17                 CALL CHAIN      ;GET ADDRESS OF PREVIOUS ROW  FILE 20
0787    1C                     INR  E           ;ROW FOUND?                  FILE 20
0788    C28207                 JNZ  RA120       ;NO - CONTINUE BACKING UP    FILE 20
078B    C3B507                 JMP  RA220       ;YES - SET NEW ROW           FILE 20
                        ;******************************                      FILE 20
                        ; ROW IS AHEAD OF CURRENT ROW *                      FILE 20
                        ; SEARCH AHEAD                *                      FILE 20
                        ;******************************                      FILE 20
078E                    RA130  EQU  $                                        FILE 20
078E    CD6A17                 CALL CHAIN       ;GET ADDRESS OF NEXT ROW     FILE 20
0791    23                     INX  H           ;SET TO NEXT LINE PTR ADDRES FILE 20
0792    1D                     DCR  E           ;ROW FOUND?                  FILE 20
0793    CAB507                 JZ   RA220       ;YES - LOCATE COLUMN         FILE 20
0796                    RA140  EQU  $           ;NO - CHECK FOR ANOTHER ROW  FILE 20
0796    7E                     MOV  A,M         ;GET LSB OF NEXT ROW POINTER FILE 20
0797    B7                     ORA  A           ;DOES NEXT ROW EXIST?        FILE 20
0798    C28E07                 JNZ  RA130       ;YES - CHECK FOR ROW FOUND   FILE 20
                        ;*******************                                 FILE 20
                        ; ROW NOT IN MEMORY *                                FILE 20
                        ; CREATE NEW ROW    *                                FILE 20
                        ;*******************                                 FILE 20
079B                    RA200  EQU $                                         FILE 20
079B    CD7317                 CALL CKFMS       ;FORMAT/SOFT KEY DEFINE MODE FILE 20
079E    C2590B                 JNZ  NEXIT       ;YES - DO NOT BUILD ROWS     FILE 20
```

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                 ;                     PROTECTED IF NOT FORMAT)           FILE 20
                 ;                     NEXT STATEMENT RETURNS)            FILE 20
 073F   C8              RZ          ;NO - RETURN                          FILE 20
                 ;                                                        FILE 20
                 ;                                                        FILE 20
                 ;  FORMAT MODE - SEE IF NEXT ASCII CHAR PROTECTED        FILE 20
                 ;                                                        FILE 20
 0740   CDDA0F          CALL CPROT     ;PREVIOUS CHAR PROTECTED?          FILE 20
 0743   CA5807          JZ   RA440     ;YES - SEE IF NEXT CHAR UNPR       FILE 20
                 ;******************************                           FILE 20
                 ; LAST CHAR WAS UNPROTECTED     *                        FILE 20
                 ; SEE IF NEXT CHAR IS PROTECTED *                        FILE 20
                 ;******************************                           FILE 20
 0746   CD1F1B          CALL FDCHO     ;IS NEXT CHARACTER PROTECTED       FILE 20
 0749   C25807          JNZ  RA440     ;YES - SEE IF NEXT IS UNPROT       FILE 20
 074C   2AC3FF          LHLD CRADR     ;NO - RECALL CURRENT CHAR          FILE 20
 074F   EB              XCHG             ;ADDRESS AND PUT INTO D,E        FILE 20
 0750            R4010  EQU  $                                            FILE 20
 0750   CDBB0B          CALL NTCHR     ;GET NEXT DISPLAY CHARACTER        FILE 20
 0753   0600            MVI  B,0       ;SET B FOR NOT PROTECTED           FILE 20
 0755   C36307          JMP  RA460     ;EXIT CHARACTER FOUND              FILE 20
                 ;*********************************                        FILE 20
                 ; PROTECT CHAR FOUND               *                     FILE 20
                 ; SEE IF SUBSEQUENT UNPROTECT CHAR *                     FILE 20
                 ;*********************************                        FILE 20
 0758            RA440  EQU $                                             FILE 20
 0758   21C2C1          LXI  H,ENDPR*256+XONLY   ;IS NEXT CHARACTER       FILE 20
 075B   CD221B          CALL FNDCH       ;AN UNPROTECT OR XMIT ONLY       FILE 20
 075E   C25007          JNZ  R4010     ;YES - RETURN UNPROTECTED          FILE 20
 0761   06FF            MVI  B,-1      ;NO - RETURN CHAR PROTECTED        FILE 20
 0763            RA460  EQU $                                             FILE 20
 0763   21C1FF          LXI  H,CRCOL                                      FILE 20
 0766   4E              MOV  C,M       ;RECALL CURSOR COLUMN              FILE 20
                 ;                                                        FILE 20
                 ;  ZRETRN - RETURN WITH Z-FLAG TRUE                      FILE 20
                 ;                                                        FILE 20
 0767            ZETRN  EQU  $                                            FILE 20
 0767   AF              XRA A          ;SET ZERO FLAG                     FILE 20
 0768   C9              RET            ;RETURN                            FILE 20
                 ;                                                        FILE 20
                 ;*********************************************            FILE 20
                 ; RCADDR - DETERMINE LOCATION OF ASCII CHARACTER *       FILE 20
                 ;   AT SPECIFIED ROW AND COLUMN OF DISPLAY LIST  *       FILE 20
                 ;*********************************************            FILE 20
                 ;                                                        FILE 20
                 ;  ENTRY:  CURROW,CURCOL = DESIRED ROW/COLUMN            FILE 20
                 ;          LSTROW,LSTCOL = LAST ROW/COLUMN DONE          FILE 20
                 ;          CURADR = ADDRESS CORRESPONDING TO             FILE 20
                 ;            LSTROW, LSTCOL                              FILE 20
                 ;          LSTLIN = ADDRESS OF LINE CORRESPONDING        FILE 20
                 ;            TO LSTROW                                   FILE 20
                 ;          NROWS = 0, BUILD NEW ROWS AS NEEDED           FILE 20
                 ;                # 0, DON'T BUILD NEW ROWS               FILE 20
                 ;          BLKFIL = 0, EXTEND LINE AS NEEDED             FILE 20
                 ;                 # 0, DON'T EXTEND LINE                 FILE 20
                 ;                                                        FILE 20
                 ;  EXIT :  Z - CHARACTER FOUND                           FILE 20
                 ;            A,B,C,L DESTROYED                           FILE 20
                 ;          NZ - CHARACTER NOT FOUND                      FILE 20
                 ;            M - ROWS NOT BUILT                          FILE 20
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07A1   219AFF         LXI  H,NROWS   ;NO - GET BUILD FLAG          FILE 20
07A4   B6             ORA  M         ;INHIBIT ROW BUILD?           FILE 20
07A5   C0             RNZ            ;YES - RETURN (A = 377B)      FILE 20
07A6   73             MOV  M,E       ;NO - STORE # OF ROWS NEEDED  FILE 20
               ;                                                   FILE 20
               ;*****************************                      FILE 20
               ; GET NEW ROW AND LINK TO OLD *                     FILE 20
               ;*****************************                      FILE 20
07A7           RA210  EQU  $                                       FILE 20
07A7   CD1206         CALL GNWLN     ;ADD A LINE TO THE DISPLAY    FILE 20
07AA   C0             RNZ            ;RETURN FAIL IF MEMORY LOCKE  FILE 20
07AB   219AFF         LXI  H,NROWS   ;DECREMENT # OF ROWS NEEDED   FILE 20
07AE   35             DCR  M         ;ALL NEEDED ROWS ALLOCATED?   FILE 20
07AF   C2A707         JNZ  RA210     ;NO - GET ANOTHER ROW         FILE 20
               ;************************************               FILE 20
               ; ALL REQUIRED ROWS HAVE BEEN ADDED *               FILE 20
               ;************************************               FILE 20
07B2   2AA1FF         LHLD LLINE     ;GET START ADDRESS OF ROW     FILE 20
07B5           RA220  EQU  $         ;UPDATE LOCATE COLUMN         FILE 20
07B5   CDF40A         CALL LTLUP     ;SET "LSTLIN" TO NEW ROW      FILE 20
07B8   3A85FF         LDA  TPCOL     ;RECALL COLUMN TO BE FOUND    FILE 20
07BB   4F             MOV  C,A       ;PUT COLUMN NUMBER INTO C-RE  FILE 20
07BC   C3CA07         JMP  RA245     ;GO LOCATE THE COLUMN         FILE 20
               ;                                                   FILE 20
               ;****************************                       FILE 20
               ; CURRENT ROW = DESIRED ROW *                       FILE 20
               ; CHECK COLUMN              *                       FILE 20
               ;****************************                       FILE 20
07BF           RA240  EQU  $                                       FILE 20
07BF   3A85FF         LDA  TPCOL     ;GET THE DESIRED COLUMN       FILE 20
07C2   4F             MOV  C,A       ;PUT IT INTO THE C-REGISTER   FILE 20
07C3   90             SUB  B         ;COLUMN WANTED >= LAST DONE?  FILE 20
07C4   F2D207         JP   RA250     ;YES - SCAN FORWARD           FILE 20
               ;*****************************************          FILE 20
               ; DESIRED COLUMN LESS THAN CURRENT COLUMN *         FILE 20
               ; START SEARCH AT BEGINNING OF ROW        *         FILE 20
               ;*****************************************          FILE 20
07C7   CDF70A         CALL LTLU1     ;SET LINE START PARAMETERS    FILE 20
               ;                       (PUTS H,L INTO D,E)         FILE 20
07CA           RA245  EQU  $                                       FILE 20
07CA   3E01           MVI  A,INTRM   ;SET FUNCTION FLAG TO IGNORE  FILE 20
07CC   326DFF         STA  TMFCT        ;NON-DISPLAYING TERMINATOR FILE 20
07CF   C3DC07         JMP RA255    ;GO LOCATE COLUMN               FILE 20
               ;******************************************         FILE 20
               ; DESIRED COLUMN AT OR PAST CURRENT COLUMN *        FILE 20
               ; START SEARCH AT CURRENT COLUMN           *        FILE 20
               ;******************************************         FILE 20
07D2           RA250  EQU $                                        FILE 20
07D2   4F             MOV  C,A       ;SAVE # OF COLUMNS TO ADVANC  FILE 20
07D3   2AC3FF         LHLD CRADR     ;GET ADDR OF LAST CHAR DONE   FILE 20
07D6   EB             XCHG                                         FILE 20
07D7   04             INR B          ;DOES LSTCOL = -1?            FILE 20
07D8   C2DD07         JNZ RA260      ;NO                           FILE 20
07DB   0D             DCR C          ;DECREMENT COLUMN COUNT       FILE 20
07DC           RA255  EQU $                                        FILE 20
07DC   1B             DCX  D         ;SET TO NEXT DISPLAY BYTE     FILE 20
               ;                                                   FILE 20
               ;****************************                       FILE 20
               ; ROW HAS BEEN FOUND        *                       FILE 20
               ; SEARCH FOR DESIRED COLUMN *                       FILE 20
```

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                                                                FILE 20
                                                                FILE 20
                                                                FILE 20
                                                                FILE 20
                                                                FILE 20
                                                                FILE 20
                    ;*****************************              FILE 20
07DD                RA260   EQU $                               FILE 20
07DD    21FEFF              LXI  H,DSPST    ;SET FOR NO CHARACTER MATCH     FILE 20
07E0    CD511B              CALL FDCHR      ;DOES CHARACTER EXIST?          FILE 20
07E3    3E00                MVI  A,DLTRM    ;SET FUNCTION FLAG TO DELETE    FILE 20
07E5    326DFF              STA  TMFCT        ;NON-DISPLAYING TERMINATOR    FILE 20
07E8    CCC109              CZ   ELMVO      ;NO - TRY TO MOVE EOL           FILE 20
07EB    EB                  XCHG            ;SET NEW CURRENT CHAR ADDRES    FILE 20
07EC    22C3FF              SHLD CRADR                                      FILE 20
07EF    EB                  XCHG                                            FILE 20
07F0    21C0FF              LXI  H,CRROW                                    FILE 20
07F3    46                  MOV  B,M        ;GET DESIRED ROW AND COLUMN     FILE 20
07F4    3A85FF              LDA  TPCOL                                      FILE 20
07F7    0D                  DCR C          ;CONVERT TO COLUMN FOUND         FILE 20
07F8    FAFC07              JM   RA270                                      FILE 20
07FB    91                  SUB C                                           FILE 20
07FC                RA270   EQU $                                           FILE 20
07FC    68                  MOV  L,B        ;UPDATE LAST ROW AND COLUMN     FILE 20
07FD    67                  MOV  H,A          ;DONE                         FILE 20
07FE    22C7FF              SHLD LTROW                                      FILE 20
0801    26FF                MVI  H,BASEH    ;SET H TO DATA PAGE             FILE 20
0803    0C                  INR C           ;RESTORE ZERO FLAG              FILE 20
0804    C9                  RET             ;RETURN                         FILE 20
                    ;                                                       FILE 20
                    ;*****************************                          FILE 20
                    ; TIMER INTERRUPT PROCESSING *                          FILE 20
                    ;*****************************                          FILE 20
                    ;                                                       FILE 20
                    ;  ENTRY:  "PSW" AND B,C PUSHED                         FILE 20
                    ;          A = INTERRUPT CODE                           FILE 20
                    ;                                                       FILE 20
0805                TINTR   EQU $                                           FILE 20
0805    CD6591              CALL ITVEC      ;TRY ALTERNATE INTERRUPT        FILE 20
0808    3AF5FF              LDA  PCCTL      ;GET PROCESSOR STATE            FILE 20
080B    D5                  PUSH D          ;SAVE REMAINING REGISTERS       FILE 20
080C    E5                  PUSH H                                          FILE 20
080D    E6FD                ANI  377Q-TMIEN                                 FILE 20
080F    D370                OUT  POCSR      ;ACKNOWLEDGE TIMER INTERRUPT    FILE 20
0811    F602                ORI  TMIEN                                      FILE 20
0813    D370                OUT  POCSR      ;RE-ENABLE THE TIMER            FILE 20
0815    21D0FF              LXI  H,RTTMR    ;DECREMENT SOFT RESET DELAY     FILE 20
0818    7E                  MOV  A,M          ;TIMER                        FILE 20
0819    3D                  DCR  A          ;COUNTING DOWN?                 FILE 20
081A    FA2308              JM   TI010      ;NO - DON'T UPDATE TIMER        FILE 20
081D    77                  MOV  M,A        ;YES - STORE NEW VALUE          FILE 20
081E    3E06                MVI  A,EDTST      ;(SET FOR RESET LED'S)        FILE 20
0820    CC0870              CZ   ZBCTL      ;RESET LED'S IF TIME DONE       FILE 20
0823                TI010   EQU  $                                          FILE 20
0823    2E50                MVI  L,TSTAL-BASE   ;DECREMENT TAPE STALLED     FILE 20
0825    7E                  MOV  A,M          ;COUNTER                      FILE 20
0826    3D                  DCR  A          ;STALL LIMIT REACHED?           FILE 20
0827    FA2B08              JM   TI020      ;YES - DON'T UPDATE COUNTER     FILE 20
082A    77                  MOV  M,A        ;NO - STORE NEW VALUE           FILE 20
082B                TI020   EQU  $                                          FILE 20
082B    2E52                MVI  L,CBLTM-BASE   ;DECREMENT BLINK TIMER      FILE 20
082D    35                  DCR  M          ;TIME OUT?                      FILE 20
082E    C23F08              JNZ  TI100      ;NO - EXIT                      FILE 20
0831    3620                MVI  M,CBDLY    ;YES - RESET TIMER              FILE 20
0833    23                  INX  H                                          FILE 20
0834    7E                  MOV  A,M        ;GET CTU BLINK MASK             FILE 20
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 0835   2E55            MVI  L,CMND-BASE                         FILE 20
 0837   AE              XRA  M          ;TOGGLE BLINKING LIGHTS  FILE 20
 0838   77              MOV  M,A        ;UPDATE LIGHT STATE      FILE 20
 0839   320B80          STA  ICTCO      ;SET CTU LIGHTS          FILE 20
 083C   C33F08          JMP  TI100                               FILE 20
                ;                                                FILE 20
                ;                                                FILE 20
                ;***************************************         FILE 20
                ; PERFORM KEYBOARD AND DATA COMM MONITOR *       FILE 20
                ; ROUTINES                             *         FILE 20
                ;***************************************         FILE 20
 083F           TI100   EQU  $                                   FILE 20
 083F   21F6FF          LXI  H,ITFLG    ;GET INTERRUPT FLAG      FILE 20
 0842   3E04            MVI  A,TRINT+1    ;TIMER INTERRUPT ALREADY  FILE 20
 0844   BE              CMP  M            ;IN PROGRESS?          FILE 20
 0845   CA5408          JZ   TI110      ;YES - DON'T DO MONITOR CALL  FILE 20
 0848   77              MOV  M,A        ;NO - SET IN-PROGRESS FLAG  FILE 20
 0849   CD0B70          CALL ZBMON                               FILE 20
 084C   F3              DI              ;**************************  FILE 20
 084D   CD0E78          CALL ZCMON      ;* KEYBOARD MONITOR ROUTINE  FILE 20
                ;                       * RE-ENABLES INTERRUPTS    *  FILE 20
                ;                       ***************************  FILE 20
 0850   21F6FF          LXI  H,ITFLG    ;SET INTERUPT CODE TO    FILE 20
 0853   35              DCR  M            ;INDICATE TIMER INTERRUPT  FILE 20
 0854           TI110   EQU  $                                   FILE 20
 0854   E1              POP  H          ;RESTORE CONTENTS OF     FILE 20
 0855   D1              POP  D            ;ALL REGISTERS AND     FILE 20
 0856   C1              POP  B            ;ALL CONDITION FLAGS   FILE 20
 0857   F1              POP  PSW                                 FILE 20
 0858   FB              EI              ;RE-ENABLE INTERRUPTS    FILE 20
 0859   C9              RET             ;RETURN TO NORMAL PROCESSING  FILE 20
                ;                                                FILE 20
                ;***************************************         FILE 20
                ; BINOCT - CONVERT BINARY TO OCTAL ASCII *       FILE 20
                ;***************************************         FILE 20
                ;                                                FILE 20
                ;  ENTRY:  A = DIGIT TO BE CONVERTED             FILE 20
                ;          H,L = ADDRESS OF OUTPUT BUFFER'S      FILE 20
                ;            HIGH ORDER BYTE                     FILE 20
                ;                                                FILE 20
                ;  EXIT :  H,L = H,L(ENTRY)+4                    FILE 20
                ;          A-C DESTROYED                         FILE 20
                ;                                                FILE 20
                ;  FIRST BYTE IS SET TO BLANK.  THE NEXT THREE   FILE 20
                ;  BYTES CONTAIN THE ASCII OCTAL EQUIVALENT OF   FILE 20
                ;  THE INPUT VALUE.  THE FIFTH BYTE IS SET TO    FILE 20
                ;  ZERO (NULL).                                  FILE 20
                ;                                                FILE 20
 085A           BNOCT   EQU  $                                   FILE 20
 085A   3620            MVI  M,ABLNK    ;SET FIRST BYTE TO BLANK FILE 20
 085C   23              INX  H                                   FILE 20
 085D   0603            MVI  B,3        ;SET B TO NUMBER OF DIGITS  FILE 20
 085F   07              RLC             ;ROTATE DOWN TWO HIGH ORDER  FILE 20
 0860   07              RLC               ;BITS                  FILE 20
 0861   4F              MOV  C,A        ;SAVE VALUE IN C-REGISTER  FILE 20
 0862   E603            ANI  3Q         ;MASK OUT TWO HIGH ORDER BIT  FILE 20
 0864           B0010   EQU  $                                   FILE 20
 0864   E607            ANI  7Q         ;MASK OUT NEXT THREE BITS  FILE 20
 0866   F630            ORI  ZERO       ;ADD IN ASCII ADJUSTMENT FILE 20
 0868   77              MOV  M,A        ;STORE ASCII CHARACTER   FILE 20
```

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                                                                   FILE 20
                                                                   FILE 20
                                                                   FILE 20
                                                                   FILE 20
                                                                   FILE 20
0869  23                 INX  H        ;INCREMENT TO NEXT BYTE     FILE 20
086A  79                 MOV  A,C      ;RECALL INPUT               FILE 20
086B  07                 RLC           ;ROTATE  TO NEXT THREE BITS FILE 20
086C  07                 RLC                                       FILE 20
086D  07                 RLC                                       FILE 20
086E  4F                 MOV  C,A      ;SAVE VALUE                 FILE 20
086F  05                 DCR  B        ;ALL BITS DONE?             FILE 20
0870  C26408             JNZ  B0010    ;NO - SET NEXT BYTE         FILE 20
0873  70                 MOV  M,B      ;YES - STORE NULL IN BUFFER FILE 20
0874  C9                 RET           ;RETURN                     FILE 20
                   ;                                               FILE 20
                   ;*********************************              FILE 20
                   ; BN2DE0 - CONVERT SINGLE BYTE TO *             FILE 20
                   ;   ASCII DECIMAL                 *             FILE 20
                   ;*********************************              FILE 20
                   ;                                               FILE 20
                   ;  ENTRY:  A = BYTE TO BE CONVERTED             FILE 20
                   ;          H,L = ADDRESS OF OUTPUT BUFFER'S     FILE 20
                   ;            HIGH ORDER ADDRESS                 FILE 20
                   ;                                               FILE 20
                   ;  EXIT :  NZ                                   FILE 20
                   ;          H,L = H,L(ENTRY)+3                   FILE 20
                   ;          A-E DESTROYED                        FILE 20
                   ;                                               FILE 20
0875               B2DE0  EQU  $                                   FILE 20
0875  2296FF             SHLD LKSAV    ;SAVE BUFFER ADDRESS        FILE 20
0878  21C208             LXI  H,BD200  ;SET OUTPUT ROUTINE TO BUFFE FILE 20
087B               B2DE1  EQU  $         ;STORE ROUTINE            FILE 20
087B  22CEFF             SHLD CTFAD    ;SET OUTPUT ROUTINE ADDRESS FILE 20
087E               B2DE2  EQU  $       ;ENTRY FOR "ASCOUT"         FILE 20
087E  5F                 MOV  E,A      ;CHANGE INPUT INTO DOUBLE   FILE 20
087F  1600               MVI  D,0        ;BYTE VALUE               FILE 20
0881  0E01               MVI  C,1      ;SET ZERO SUPPRESS FLAG     FILE 20
0883  C39D08             JMP  BD050    ;GO TO CONVERT ROUTINE      FILE 20
                   ;                                               FILE 20
                   ;************************************************ FILE 20
                   ; BN2DEC - CONVERT DOUBLE WORD BINARY TO DECIMAL * FILE 20
                   ;************************************************ FILE 20
                   ;                                               FILE 20
                   ;  ENTRY:  D,E = BINARY VALUE                   FILE 20
                   ;          H,L = ADDRESS OF HIGH ORDER BYTE IN  FILE 20
                   ;            BUFFER                             FILE 20
                   ;                                               FILE 20
                   ;  EXIT :  H,L = H,L(ENTRY)+5                   FILE 20
                   ;          A-E DESTROYED                        FILE 20
                   ;          LNKSAV DESTROYED                     FILE 20
                   ;                                               FILE 20
                   ;  THE FIRST FIVE BYTES OF THE BUFFER CONTAIN THE FILE 20
                   ;  ASCII DECIMAL VALUE.  THE SIXTH BYTE IS SET TO FILE 20
                   ;  ZERO (NULL).  LEADING ZEROES ARE BLANKED     FILE 20
                   ;                                               FILE 20
0886               B2DEC  EQU  $                                   FILE 20
0886  2296FF             SHLD LKSAV    ;SAVE BUFFER ADDRESS        FILE 20
0889  21C208             LXI  H,BD200  ;SET OUTPUT ROUTINE TO BUFFE FILE 20
088C  22CEFF             SHLD CTFAD      ;STORE ROUTINE            FILE 20
088F  0E01               MVI  C,1      ;SET ZERO SUPPRESS FLAG     FILE 20
0891  21F0D8             LXI  H,-10000                             FILE 20
0894  CDB008             CALL BD100    ;EXTRACT 10,000'S VALUE     FILE 20
0897  2118FC             LXI  H,-1000                              FILE 20
089A  CDB008             CALL BD100    ;EXTRACT 1,000'S VALUE      FILE 20
```

```
                                                              FILE 20
                                                              FILE 20
                                                              FILE 20
                                                              FILE 20
                                                              FILE 20
089D              BD050  EQU  $                               FILE 20
089D    219CFF           LXI  H,-100                          FILE 20
08A0    CDB008           CALL BD100      ;EXTRACT 100'S VALUE FILE 20
08A3    21F6FF           LXI  H,-10                           FILE 20
08A6    CDB008           CALL BD100      ;EXTRACT 10'S VALUE  FILE 20
08A9    7B               MOV  A,E        ;CONVERT UNITS DIGIT TO  FILE 20
08AA    F630             ORI  ZERO         ;ASCII AND STORE IN    FILE 20
08AC    0D               DCR  C          ;SET C TO FORCE ZERO STORE  FILE 20
08AD    C3CDFF           JMP  EONTF      ;GO TO OUTPUT ROUTINE    FILE 20
                  ;                                           FILE 20
                  ;******************************             FILE 20
                  ; B2D100 - EXTRACT RADIX VALUE *            FILE 20
                  ;******************************             FILE 20
                  ;                                           FILE 20
                  ;  ENTRY:  C = 0, SUPPRESS ZERO             FILE 20
                  ;            < 0, DON'T SUPPRESS ZEROES     FILE 20
                  ;          D,E = VALUE TO BE CONVERTED      FILE 20
                  ;          H,L = -RADIX                     FILE 20
                  ;          LNKSAV = CURRENT BUFFER ADDRESS  FILE 20
                  ;                                           FILE 20
                  ;  EXIT :  C < 0, CHARACTER STORED          FILE 20
                  ;            = 0, ZERO SUPPRESSED           FILE 20
                  ;          (LNKSAV) = (LNKSAV)+1            FILE 20
                  ;          A-C, H,L DESTROYED               FILE 20
                  ;                                           FILE 20
08B0              BD100  EQU  $                               FILE 20
08B0    062F             MVI  B,ZERO-1   ;SET INITIAL ASCII VALUE  FILE 20
08B2    EB               XCHG            ;EXCHANGE RADIX AND INPUT FILE 20
08B3              BD110  EQU  $                               FILE 20
08B3    04               INR  B          ;INCREMENT ASCII VALUE    FILE 20
08B4    19               DAD  D          ;SUBTRACT RADIX           FILE 20
08B5    DAB308           JC   BD110      ;CONTINUE IF INPUT>RADIX  FILE 20
08B8    7D               MOV  A,L        ;ADD BACK RADIX TO EXTRACT FILE 20
08B9    93               SUB  E            ;REMAINDER              FILE 20
08BA    5F               MOV  E,A        ;SAVE REMAINDER IN D,E    FILE 20
08BB    7C               MOV  A,H                             FILE 20
08BC    9A               SBB  D                               FILE 20
08BD    57               MOV  D,A                             FILE 20
08BE    78               MOV  A,B        ;GET CONVERTED VALUE      FILE 20
08BF    C3CDFF           JMP  EONTF      ;GO TO OUTPUT ROUTINE     FILE 20
                  ;*******************************************      FILE 20
                  ; B2D200 - STORE DECIMAL VALUE FOR INTERNAL USE *  FILE 20
                  ;*******************************************      FILE 20
                  ;                                           FILE 20
                  ;  ENTRY:  A = CONVERTED VALUE              FILE 20
                  ;                                           FILE 20
08C2              BD200  EQU  $                               FILE 20
08C2    FE30             CPI  ZERO       ;CONVERTED VALUE = ZERO?   FILE 20
08C4    C2CD08           JNZ  BD210      ;NO - STORE THE DIGIT      FILE 20
08C7    0D               DCR  C          ;NON-ZERO CHAR ALREADY DONE? FILE 20
08C8    FACE08           JM   BD220      ;YES - STORE THE DIGIT     FILE 20
08CB    0C               INR  C          ;NO - RESTORE ZERO FLAG    FILE 20
08CC    C9               RET               ;AND EXIT                FILE 20
08CD              BD210  EQU  $                               FILE 20
08CD    0D               DCR  C          ;CLEAR ZERO SUPPRESS FLAG  FILE 20
08CE              BD220  EQU  $                               FILE 20
08CE    2A96FF           LHLD LKSAV      ;GET BUFFER POINTER        FILE 20
08D1    77               MOV  M,A        ;STORE CONVERTED VALUE     FILE 20
08D2    23               INX  H          ;INCREMENT BUFFER POINTER  FILE 20
08D3    3600             MVI  M,0        ;SET NEXT BYTE TO NULL     FILE 20
```

```
                                                                FILE 20
                                                                FILE 20
                                                                FILE 20
                                                                FILE 20
                                                                FILE 20
08D5  2296FF          SHLD LKSAV     ;STORE NEW POINTER VALUE   FILE 20
08D8  C9              RET            ;RETURN                    FILE 20
                ;                                               FILE 20
                ;*******************************                 FILE 20
                ; CALCULATE CHECKSUM            *               FILE 20
                ;                               *               FILE 20
                ; ENTRY:                        *               FILE 20
                ;       (H,L) = ADDRESS OF AREA *               FILE 20
                ;       TO BE CHECKSUMED        *               FILE 20
                ;                               *               FILE 20
                ;       D = NO. BYTES IN AREA/256 *             FILE 20
                ; WE ASSUME THE AREA BEGINS ON A *              FILE 20
                ; 256 BYTE BOUNDARY, I.E., L=0. *               FILE 20
                ;       CALL CHKSUM             *               FILE 20
                ; EXIT:                         *               FILE 20
                ;       A = CHECKSUM            *               FILE 20
                ;       ALL OTHER REGS. UNCHANGED *             FILE 20
                ;       FLAGS DESTROYED         *               FILE 20
                ;*******************************                 FILE 20
08D9            CKSUM  EQU  $                                   FILE 20
08D9  D5              PUSH D         ;SAVE REGISTER D-H         FILE 20
08DA  E5              PUSH H                                    FILE 20
08DB  AF              XRA  A         ;ZERO SUM                  FILE 20
08DC            CU100  EQU  $                                   FILE 20
08DC  86              ADD  M         ;ADD BYTE                  FILE 20
08DD  CE00            ACI  0         ;ADD CARRY                 FILE 20
08DF  2C              INR  L         ;BUMP ADDRESS POINTER      FILE 20
08E0  C2DC08          JNZ  CU100     ;ADD NEXT BYTE             FILE 20
                ;                                               FILE 20
08E3  24              INR  H         ;FINISHED A 256 BYTE BLOCK FILE 20
08E4  15              DCR  D                                    FILE 20
08E5  C2DC08          JNZ  CU100     ;DO NEXT 256 BYTES         FILE 20
                ;                                               FILE 20
08E8  03              INX  B         ;INCREMENT TO NEXT STORE ADD FILE 20
08E9  57              MOV  D,A       ;SAVE CHECKSUM IN D-REGISTER FILE 20
08EA  E1              POP  H         ;RECALL STARTING ADDRESS   FILE 20
08EB  7C              MOV  A,H                                  FILE 20
08EC  FEF0            CPI  170000Q/256  ;LAST RAM BLOCK?        FILE 20
08EE  C2F208          JNZ  CU110     ;NO - EXIT                 FILE 20
08F1  4D              MOV  C,L       ;YES - SET B,C TO FIRST    FILE 20
                ;                      CHECKSUM STORE ADDRESS   FILE 20
08F2            CU110  EQU  $                                   FILE 20
08F2  7A              MOV  A,D       ;PUT CHECKSUM BACK INTO A-RE FILE 20
08F3  D1              POP  D         ;RESTORE D,E               FILE 20
08F4  C9              RET            ;RETURN                    FILE 20
                ;                                               FILE 20
                ;******************************************      FILE 20
                ; CLEAR - RESET TERMINAL BY ESCAPE SEQUENCE *   FILE 20
                ;******************************************      FILE 20
08F5            CLEAR  EQU  $                                   FILE 20
08F5  CD5115          CALL IBSYC     ;WAIT UNTIL TAPES NOT BUSY FILE 20
08F8  3E04            MVI  A,FCRST   ;SET FLAG TO FORCE FULL    FILE 20
08FA  CD7513          CALL SCMFL       ;TERMINAL RESET          FILE 20
08FD  3E80            MVI  A,CTOFF   ;TURN OFF THE DISPLAY      FILE 20
08FF  322780          STA  ICRRW                                FILE 20
0902  C7              RST  RESET     ;GO DO TERMINAL RESET      FILE 20
                ;                                               FILE 20
                ;*******************************************     FILE 20
                ; DISPL1 - ADD ENOUGH BLOCKS TO REACH DESIRED * FILE 20
                ;   COLUMN                                  *   FILE 20
```

```
                    ;*******************************************
                    ;
                    ;  ENTRY:  C = NUMBER OF CHARACTERS NEEDED - 1
                    ;          D,E = LOCATION OF EOL IN LINE
                    ;
                    ;  EXIT :  A = 0, NOT ENOUGH BLOCKS (MEMORY LOCK)
                    ;            B-L DESTROYED
                    ;          A # 0, MEMORY ALLOCATED
                    ;            D,E = FIRST CHAR ADDR IN NEW BLOCKS
                    ;            B,C,H,L DESTROYED
                    ;
                    ;  IF ONLY ONE CHARACTER IS TO BE ADDED, THE
                    ;  CHARACTER IS ADDED TO THE LINE.  OTHERWISE, ALL
                    ;  REQUIRED BLOCKS ARE ADDED TO THE LINE AND THE
                    ;  LINE IS FILLED WITH BLANKS UP TO THE DESIRED
                    ;  CHARACTER ONLY.
                    ;
0903                DSPL1  EQU $
0903   0C                  INR C           ;MOVE EOL IF NECESSARY
0904   CDC909              CALL ELMOV
0907   0D                  DCR C
0908   FAA209              JM   DS220       ;CHARACTER POSITION FOUND
090B   219BFF              LXI  H,NCHAR     ;SAVE NUMBER OF CHARACTERS
090E   71                  MOV  M,C                ;TO BE ADDED - 1
090F                DSPL2  EQU  $
090F   EB                  XCHG
0910   2294FF              SHLD ELADR    ;SAVE EOL ADDRESS
0913   0D                  DCR  C          ;SINGLE CHARACTER ADDED?
0914   FAB209              JM   DS400      ;YES - DO FAST EXTEND
0917   3E20                MVI  A,ABLNK    ;NO - GET A DISPLAY BLOCK
0919   CDC405              CALL GTBLK        ;FILLED WITH BLANKS
091C   C8                  RZ              ;RETURN IF MEMORY LOCKED
091D   EB                  XCHG            ;PUT BLOCK ADDRESS IN D,E
091E   F60F                ORI  BLKSM      ;COMPUTE HIGH ADDR OF BLOCK
0920   4F                  MOV  C,A        ;SAVE ADDRESS OF FIRST NEW
0921   C5                  PUSH B            ;BLOCK ADDED
0922   3A9BFF              LDA  NCHAR      ;GET # OF CHARS TO BE ADDED
0925   0600                MVI B,0       ;INITIALIZE COUNT
0927                DS120  EQU $
0927   04                  INR B           ;INCREMENT COUNT
0928   D60E                SUI BLKSZ-2    ;SUB. NO. OF CHARS IN BLOCK
092A   F22709              JP   DS120     ;JUMP IF MORE BLOCKS NEEDED
092D   3284FF              STA  COUNT       ;SAVE LAST CHAR BLOCK POS
0930   05                  DCR B          ;SINGLE BLOCK?
0931   CA5209              JZ   DS160     ;YES
                    ;
                    ;*************************
                    ; MULTIPLE BLOCKS REQUIRED *
                    ;*************************
0934   2199FF              LXI  H,NBLKS   ;SAVE BLOCK COUNT
0937   70                  MOV M,B
                    ;**********************
                    ; GET SUBSEQUENT BLOCKS *
                    ;**********************
0938   D5                  PUSH D           ;SAVE ADDRESS OF LAST BLOCK
0939                DS140  EQU  $
0939   3E20                MVI  A,ABLNK    ;GET A DISPLAY BLOCK FILLED
093B   CDC405              CALL GTBLK        ;WITH BLANKS
093E   EB                  XCHG             ;PUT BLOCK ADDRESS IN D,E
093F   E1                  POP  H           ;RECALL ADDRESS OF LAST BLOC
```

```
                                                                                  FILE 20
8080 MACRO ASSEMBLER, VER 2.4          ERRORS = 0 PAGE 51                          FILE 20
                                                                                  FILE 20
                                                                                  FILE 20
                                                                                  FILE 20
  0940   CAAC09          JZ   DS240     ;EXIT IF MEMORY LOCKED                    FILE 20
  0943   D5              PUSH D         ;SAVE NEW LINE ADDRESS                    FILE 20
  0944   2B              DCX  H         ;LINK NEW BLOCK TO PREVIOUS               FILE 20
  0945   F60F            ORI BLKSM                                                FILE 20
  0947   70              MOV M,B      ;MSB'S                                      FILE 20
  0948   2B              DCX  H                                                   FILE 20
  0949   77              MOV  M,A       ;STORE LSB                                FILE 20
  094A   2199FF          LXI  H,NBLKS                                             FILE 20
  094D   35              DCR  M         ;ALL BLOCKS ALLOCATED?                    FILE 20
  094E   C23909          JNZ  DS140     ;NO - GET ANOTHER BLOCK                   FILE 20
  0951   F1              POP  PSW       ;YES - POP THE STACK                      FILE 20
                 ;                                                                FILE 20
                 ;****************************                                    FILE 20
                 ; ALL BLOCKS HAVE BEEN ADDED *                                   FILE 20
                 ;****************************                                    FILE 20
  0952           DS160   EQU  $                                                   FILE 20
  0952   3A84FF          LDA  COUNT     ;COMPUTE NUMBER OF BYTES                  FILE 20
  0955   2F              CMA              ;TO FILL                                FILE 20
  0956   3C              INR  A                                                   FILE 20
  0957   4F              MOV C,A      ;SAVE IN C                                  FILE 20
  0958   83              ADD E        ;GET FIRST FILL ADDR                        FILE 20
  0959   3D              DCR  A         ;SET FIRST LSB FILL ADDRESS               FILE 20
  095A   6F              MOV  L,A       ;PUT LSB INTO L                           FILE 20
  095B   62              MOV  H,D       ;GET MSB FROM D                           FILE 20
  095C   06CC            MVI  B,EOL     ;SET "EOL" CHARACTER                      FILE 20
  095E   3AC1FF          LDA  CRCOL     ;GET CURRENT COLUMN                       FILE 20
  0961   FE4F            CPI  MXCOL     ;CHAR ADDED TO LAST COLUMN?               FILE 20
  0963   C26D09          JNZ  DS170     ;NO - SET "EOL" CHARACTER                 FILE 20
  0966   3A89FF          LDA  DCHAR     ;YES - GET CHARACTER STORED               FILE 20
  0969   B7              ORA  A         ;IS IT ASCII?                             FILE 20
  096A   F26E09          JP   DS175     ;YES - DON'T ADD "EOL"                    FILE 20
                 ;                      NO - SET "EOL" CHARACTER                  FILE 20
                 ;*****************************************                       FILE 20
                 ; FILL UNUSED PART OF BLOCK WITH "FILL" CODES *                  FILE 20
                 ;*****************************************                       FILE 20
  096D           DS170   EQU  $                                                   FILE 20
  096D   70              MOV  M,B       ;STORE FILL/EOL CHARACTER                 FILE 20
  096E           DS175   EQU  $                                                   FILE 20
  096E   2B              DCX  H         ;GO TO NEXT BYTE                          FILE 20
  096F   0D              DCR  C         ;ALL UNUSED BYTES FILLED?                 FILE 20
  0970   06C3            MVI  B,FILL      ;(SET "FILL" CODE)                      FILE 20
  0972   C26D09          JNZ  DS170     ;NO - SET NEXT BYTE                       FILE 20
                 ;*************************                                       FILE 20
                 ; WRITE LINK TO NEXT LINE *                                      FILE 20
                 ;*************************                                       FILE 20
  0975           DS180   EQU $                                                    FILE 20
  0975   2AC9FF          LHLD LTLIN     ;GET ADDR CURRENT LINE                    FILE 20
  0978   EB              XCHG                                                     FILE 20
  0979   2B              DCX  H         ;STORE AS NEXT BLOCK POINTER              FILE 20
  097A   72              MOV  M,D                                                 FILE 20
  097B   2B              DCX  H                                                   FILE 20
  097C   13              INX  D         ;POINT TO NEXT LINE POINTER               FILE 20
  097D   73              MOV  M,E                                                 FILE 20
                 ;                                                                FILE 20
                 ;***************************                                     FILE 20
                 ; LINK NEW BLOCK(S) TO OLD *                                     FILE 20
                 ;***************************                                     FILE 20
  097E   D1              POP  D         ;RECALL FIRST NEW BLOCK ADDR              FILE 20
  097F   3A9BFF          LDA  NCHAR     ;GET # OF CHARS ADDED - 1                 FILE 20
  0982   B7              ORA  A         ;DOES NEW CHAR REPLACE EOL?               FILE 20
```

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  0983   3A89FF          LDA  DCHAR      ;(DEFAULT TO ADD 1 CHAR)       FILE 20
  0986   CA8B09          JZ   DS210     ;YES - OVERWRITE EOL            FILE 20
  0989   3E20            MVI  A,ABLNK   ;NO - STORE BLANK OVER EOL      FILE 20
  098B          DS210   EQU  $                                          FILE 20
  098B   47              MOV  B,A       ;SAVE CHARACTER TO BE STORED    FILE 20
  098C   2A94FF          LHLD ELADR     ;RECALL EOL ADDRESS             FILE 20
  098F   3AC0FF          LDA  CRROW                                     FILE 20
  0992   F640            ORI  MYEOL     ;SET FOR POSSIBLE EOL SKIP      FILE 20
  0994   F3              DI             ;DISABLE INTERRUPTS             FILE 20
  0995   322780          STA  ICRRW     ;TURN OFF DISPLAY DMA           FILE 20
  0998   70              MOV  M,B       ;OVERWRITE EOL                  FILE 20
  0999   2B              DCX  H                                         FILE 20
  099A   72              MOV  M,D       ;CHANGE NEXT BLOCK LINK TO      FILE 20
  099B   2B              DCX  H           ;POINT TO NEW BLOCKS          FILE 20
  099C   73              MOV  M,E                                       FILE 20
  099D   CD1D0F          CALL DSLN1     ;TURN DISPLAY BACK ON           FILE 20
  09A0   B4              ORA  H         ;SET Z-FALSE                    FILE 20
  09A1   C9              RET            ;RETURN                         FILE 20
                ;****************************                           FILE 20
                ; EOL MOVE SATISFIED REQUEST *                          FILE 20
                ; CHECK FOR SINGLE CHARACTER *                          FILE 20
                ;****************************                           FILE 20
  09A2          DS220   EQU $                                           FILE 20
  09A2   3D              DCR  A         ;SINGLE CHARACTER?              FILE 20
  09A3   329BFF          STA  NCHAR     ;(SET NCHAR)                    FILE 20
  09A6   C0              RNZ            ;NO - RETURN                    FILE 20
  09A7   3A89FF          LDA  DCHAR     ;YES - GET THE CHARACTER        FILE 20
  09AA   12              STAX D         ;STORE THE CHARACTER            FILE 20
  09AB   C9              RET          ;RETURN                           FILE 20
                ;**************************                             FILE 20
                ; ALL BLOCKS NOT AVAILABLE *                            FILE 20
                ; INITIALIZE END OF LINE   *                            FILE 20
                ;**************************                             FILE 20
  09AC          DS240   EQU $                                           FILE 20
  09AC   36CC            MVI  M,EOL     ;STORE AN EOL                   FILE 20
  09AE   EB              XCHG           ;PUT ADDRESS INTO D,E           FILE 20
  09AF   C37509          JMP DS180                                      FILE 20
                ;                                                       FILE 20
                ;***************************                            FILE 20
                ; SINGLE CHARACTER ADDITION *                           FILE 20
                ;***************************                            FILE 20
  09B2          DS400   EQU  $                                          FILE 20
  09B2   CDBF05          CALL GBLKF     ;GET A DISPLAY BLOCK            FILE 20
  09B5   C8              RZ             ;RETURN IF MEMORY LOCKED        FILE 20
  09B6   54              MOV  D,H       ;SAVE BLOCK ADDRESS IN D,E      FILE 20
  09B7   5D              MOV  E,L                                       FILE 20
  09B8   F60F            ORI  BLKSM     ;PUT AN EOL AT THE FIRST        FILE 20
  09BA   6F              MOV  L,A         ;DISPLAY CHARACTER            FILE 20
  09BB   36CC            MVI  M,EOL       ;LOCATION IN THE BLOCK        FILE 20
  09BD   E5              PUSH H         ;SAVE ADDRESS OF BLOCK          FILE 20
  09BE   C37509          JMP  DS180     ;LINK BLOCK TO DISPLAY          FILE 20
                ;                                                       FILE 20
                ;                                                       FILE 20
                ; * * * * * * * * * * * * * * * * * * * * * * * * *     FILE 20
                ;                                                       FILE 20
                ;  EOLMOV - MOVE EOL IN A BLOCK                         FILE 20
                ;                                                       FILE 20
                ;      ENTRY:  C = NUMBER OF BYTES NEEDED               FILE 20
                ;              D,E = ADDRESS OF EXISTING EOL            FILE 20
                ;                                                       FILE 20
```

```
                                                                        FILE 20
                                                                        FILE 20
                                                                        FILE 20
                                                                        FILE 20
                                                                        FILE 20
                          ;      EXIT :  A = NUMBER OF CHARACTERS ADDED  FILE 20
                          ;              C = 0, CHARACTER FOUND          FILE 20
                          ;                D,E = ADDRESS OF CHARACTER    FILE 20
                          ;              C = NUMBER OF CHARACTERS NEEDED FILE 20
                          ;                D,E = ADDRESS OF LAST BYTE IN BLK FILE 20
                          ;              H = BASEH                       FILE 20
                          ;              B,L DESTROYED                   FILE 20
                          ;                                              FILE 20
                          ;   EOLMVO - MOVE ONLY IF UNPROTECTED          FILE 20
                          ;                                              FILE 20
09C1                      ELMVO  EQU  $                                  FILE 20
09C1    3A91FF                   LDA  BKFIL      ;GET BLOCK FILL INHIBIT FLAG FILE 20
09C4    3C                       INR  A          ;BLOCK FILL INHIBITED OR FILE 20
09C5    C4DA0F                   CNZ  CPROT        ;CURSOR IN PROTECTED FIELD FILE 20
09C8    C8                       RZ              ;YES - RETURN           FILE 20
                          ;                                              FILE 20
09C9                      ELMOV  EQU  $                                  FILE 20
09C9    7B                       MOV  A,E        ;COMPUTE NUMBER OF BYTES FILE 20
09CA    E60F                     ANI  BLKSM        ;AVAILABLE IN BLOCK   FILE 20
09CC    D602                     SUI  2            ;(DELETE BYTES FOR LINK) FILE 20
09CE    C8                       RZ              ;RETURN IF NONE AVAILABLE FILE 20
09CF    EB                       XCHG            ;PUT CURRENT ADDRESS IN H,L FILE 20
09D0    B9                       CMP  C          ;ENOUGH CHARACTERS?     FILE 20
09D1    47                       MOV  B,A          ;(SET B TO FILL BLOCK) FILE 20
09D2    1140CC                   LXI  D,EOL*256+MYEOL   ;(SET FOR PARTIAL FILE 20
                          ;                       LINE EXTENSION)        FILE 20
09D5    FAEA09                   JM   EM100      ;NO - BLANK REST OF BLOCK FILE 20
09D8    41                       MOV  B,C        ;YES - BLANK WHAT'S NEEDED FILE 20
09D9    3AC1FF                   LDA  CRCOL      ;GET CURRENT COLUMN POSITION FILE 20
09DC    FE4F                     CPI  MXCOL      ;ADDING TO LAST COLUMN? FILE 20
09DE    C2EA09                   JNZ  EM100      ;NO - NEED EOL AT LINE END FILE 20
09E1    3A89FF                   LDA  DCHAR      ;YES - GET NEW CHARACTER FILE 20
09E4    B7                       ORA  A          ;IS IT  ASCII?          FILE 20
09E5    FAEA09                   JM   EM100      ;NO - NEED EOL AT LINE END FILE 20
09E8    16C3                     MVI  D,FILL     ;YES - DON'T NEED EOL   FILE 20
                          ;                                              FILE 20
                          ;                                              FILE 20
                          ;   FILL THE BLOCK                             FILE 20
                          ;                                              FILE 20
09EA                      EM100  EQU  $                                  FILE 20
09EA    79                       MOV  A,C        ;COMPUTE NUMBER OF ADDITIONA FILE 20
09EB    90                       SUB  B            ;BYTES NEEDED         FILE 20
09EC    4F                       MOV  C,A        ;SAVE IT IN C FOR RETURN FILE 20
09ED    3AC0FF                   LDA  CRROW      ;SET CONTROL TO TURN OFF DMA FILE 20
09F0    B3                       ORA  E                                  FILE 20
09F1    58                       MOV  E,B        ;SAVE NUMBER OF BYTES ADDED FILE 20
09F2    F3                       DI              ;DISABLE INTERRUPTS     FILE 20
09F3    322780                   STA  ICRRW   ;TURN OFF DMA              FILE 20
                          ;                                              FILE 20
09F6                      EM110  EQU  $                                  FILE 20
09F6    3620                     MVI  M,ABLNK    ;FILL BLOCK WITH BLANKS FILE 20
09F8    2B                       DCX  H          ;MOVE TO NEXT BYTE      FILE 20
09F9    05                       DCR  B          ;FILL COMPLETED?        FILE 20
09FA    C2F609                   JNZ  EM110      ;NO - DO NEXT BYTE      FILE 20
09FD    72                       MOV  M,D        ;YES - ADD EOL OR EOL FILL FILE 20
09FE    CD1D0F                   CALL DSLN1      ;TURN DISPLAY BACK ON   FILE 20
0A01    AF                       XRA  A          ;CLEAR A-REGISTER       FILE 20
0A02    B1                       ORA  C          ;ALL CHARACTERS DONE?   FILE 20
0A03    C2070A                   JNZ  EM130      ;NO - RETURN ADDRESS OF EOL FILE 20
0A06    23                       INX  H          ;YES - RETURN ADDR OF LAST C FILE 20
```

```
                                                                FILE 20
                                                                FILE 20
                                                                FILE 20
                                                                FILE 20
                                                                FILE 20
0A07                EM130   EQU   $                             FILE 20
0A07    7B                  MOV   A,E       ;PUT # OF CHARS DONE IN A-RE   FILE 20
0A08    EB                  XCHG            ;PUT CHARACTER ADDRESS IN D,   FILE 20
0A09    2190FF              LXI   H,EOLMV     ;(SET H TO DATA PAGE)        FILE 20
0A0C    3601                MVI   M,1       ;SET EOLMV FLAG                FILE 20
0A0E    C9                  RET             ;RETURN                        FILE 20
                    ;                                                      FILE 20
                    ;*******************                                   FILE 20
                    ; LD - LINE DELETE *                                   FILE 20
                    ;*******************                                   FILE 20
0A0F                LNDEL   EQU $                                          FILE 20
0A0F    CD7317              CALL CKFMS    ;FORMAT MODE?                    FILE 20
0A12    CC1507              CZ   RADR1    ;FIND LINE IF NOT                FILE 20
0A15    C0                  RNZ           ;LINE NOT FOUND                  FILE 20
0A16    2AC9FF              LHLD LTLIN    ;GET ADDR OF LAST LINE DONE      FILE 20
0A19    7E                  MOV   A,M     ;GET PREVIOUS LINE'S LSB         FILE 20
0A1A    B7                  ORA   A       ;ANY PREVIOUS LINES?             FILE 20
0A1B    CA2C0A              JZ    LD050   ;NO - DO CLEAR LINE ONLY         FILE 20
0A1E    CD320A              CALL LNDLO    ;YES - DELETE CURRENT LINE       FILE 20
                    ;**************************************                FILE 20
                    ; UPDATE LSTLIN AND CURADR TO ADDRESS *                FILE 20
                    ; OF NEXT LINE                        *                FILE 20
                    ;**************************************                FILE 20
0A21    60                  MOV   H,B       ;PUT NEW LINE ADDRESS INTO     FILE 20
0A22    69                  MOV   L,C         ;H,L                         FILE 20
0A23    CD4E17              CALL  BCKT5     ;UPDATE CURRENT LINE AND ADD   FILE 20
0A26    CD7F0A              CALL  LNINO     ;GO UPDATE TOP LINE IF NEEDE   FILE 20
0A29    C3F206              JMP   PTLIN     ;ADD LINE TO FREE LIST         FILE 20
0A2C                LD050   EQU   $                                        FILE 20
0A2C    CDBE18              CALL  CEARL     ;CLEAR THE LINE                FILE 20
0A2F    C3771E              JMP   CRPRT     ;SET CURSOR AT LEFT MARGIN     FILE 20
                    ;                                                      FILE 20
                    ;***************************************               FILE 20
                    ; LINDLO - RMOVE LINE FROM LINKED LIST *               FILE 20
                    ;***************************************               FILE 20
                    ;                                                      FILE 20
                    ;  ENTRY:  H,L = ADDRESS OF NEXT LINE FIELD            FILE 20
                    ;               (LSB) OF LINE TO BE DELETED            FILE 20
                    ;                                                      FILE 20
                    ;  EXIT :  B,C = ADDRESS OF LSB PORTION OF             FILE 20
                    ;               NEXT LINE POINTER IN NEW LINE          FILE 20
                    ;          D,E = H,L(ENTRY)                            FILE 20
                    ;          A,H,L DESTROYED                             FILE 20
                    ;                                                      FILE 20
0A32                LNDLO   EQU   $                                        FILE 20
0A32    5D                  MOV   E,L       ;SAVE ADDRESS OF LINE TO BE    FILE 20
0A33    54                  MOV   D,H         ;DELETED IN D,E              FILE 20
0A34    4E                  MOV   C,M       ;GET ADDRESS OF NEXT LINE      FILE 20
0A35    23                  INX   H                                        FILE 20
0A36    46                  MOV   B,M                                      FILE 20
0A37    23                  INX   H         ;GET ADDRESS OF PREVIOUS LIN   FILE 20
0A38    7E                  MOV   A,M                                      FILE 20
0A39    23                  INX   H                                        FILE 20
0A3A    66                  MOV   H,M                                      FILE 20
0A3B    B7                  ORA   A         ;DOES PREVIOUS LINE EXIST?     FILE 20
0A3C    C2480A              JNZ   LD200     ;YES - LINK 2 LINES TOGETHER   FILE 20
                    ;**************************************                FILE 20
                    ;  FIRST LINE DELETED - UPDATE FLINE  *                FILE 20
                    ;**************************************                FILE 20
0A3F    60                  MOV   H,B       ;MOVE NEW CURRENT LINE TO H,   FILE 20
```

```
                                                                 FILE 20
8080 MACRO ASSEMBLER, VER 2.4          ERRORS = 0 PAGE 55        FILE 20
                                                                 FILE 20
                                                                 FILE 20
                                                                 FILE 20
0A40   69             MOV  L,C                                   FILE 20
0A41   23             INX  H        ;SET ADDR TO NEXT LINE FIELD FILE 20
0A42   229FFF         SHLD FLINE                                 FILE 20
0A45   C34E0A         JMP  LD300    ;SET NEW PREV LINE POINTER   FILE 20
                ;                                                FILE 20
                ;*****************************************       FILE 20
                ; UPDATE NEXT LINE FIELD IN PREVIOUS LINE *      FILE 20
                ;*****************************************       FILE 20
0A48            LD200  EQU $                                     FILE 20
0A48   6F             MOV  L,A      ;PUT LSB INTO L-REGISTER     FILE 20
0A49   23             INX  H        ;SET TO MSB OF NEXT LINE FLD FILE 20
0A4A   CD140F         CALL DSLNK    ;SET NEW NEXT LINE LINK TO   FILE 20
                ;                     CURRENT ROW                FILE 20
                ;*************************************           FILE 20
                ; SET PREVIOUS LINE FIELD IN NEXT LINE *         FILE 20
                ;*************************************           FILE 20
0A4D   7D             MOV  A,L      ;SAVE PREV LINE ADDR'S LSB   FILE 20
0A4E            LD300  EQU  $                                    FILE 20
0A4E   03             INX  B        ;INCREMENT TO NEXT LINE PTR  FILE 20
0A4F   C5             PUSH B        ;SAVE ADDRESS                FILE 20
0A50   03             INX  B        ;SET ADDRESS TO PREVIOUS     FILE 20
0A51   03             INX  B          ;LINE FIELD                FILE 20
0A52   02             STAX B        ;STORE LSB VALUE             FILE 20
0A53   03             INX  B                                     FILE 20
0A54   7C             MOV  A,H                                   FILE 20
0A55   02             STAX B        ;STORE MSB VLAUE             FILE 20
0A56   C1             POP  B        ;RESTORE CONTENTS OF B,C     FILE 20
0A57   C9             RET           ;RETURN                      FILE 20
                ;                                                FILE 20
                ;******************                              FILE 20
                ; LI - LINE INSERT *                             FILE 20
                ;******************                              FILE 20
0A58            LNINS  EQU $                                     FILE 20
0A58   CD7317         CALL CKFMS   ;FORMAT MODE?                 FILE 20
0A5B   CC1507         CZ  RADR1    ;FIND LINE IF NOT             FILE 20
0A5E   C0             RNZ          ;RETURN IF LINE NOT FOUND     FILE 20
0A5F   CDBF05         CALL GBLKF   ;GET BLOCK FOR NEW LINE       FILE 20
0A62   C8             RZ           ;RETURN IF NOT AVAILABLE      FILE 20
                ;*****************************                   FILE 20
                ; STORE LINK AT END OF NEW LINE *                FILE 20
                ;*****************************                   FILE 20
0A63   C60B           ADI BLKSZ-5  ;GET ADDR OF NEXT LINE FIELD  FILE 20
0A65   2D             DCR L                                      FILE 20
0A66   74             MOV M,H      ;STORE LINK MSB'S             FILE 20
0A67   2D             DCR L                                      FILE 20
0A68   77             MOV M,A      ;STORE LINK LSB'S             FILE 20
0A69   D602           SUI 2        ;STORE EOL IN NEW LINE        FILE 20
0A6B   6F             MOV L,A                                    FILE 20
0A6C   CD9C0D         CALL SCHR1    ;SET FIRST DISPLAY CHARACTER FILE 20
                ;*****************************************        FILE 20
                ; ADJUST LSTLIN AND CURADR PNTRS TO NEW LINE *   FILE 20
                ;*****************************************        FILE 20
0A6F   22C3FF         SHLD CRADR    ;SET CURADR TO 1ST CHAR      FILE 20
0A72   23             INX  H        ;SET TO NEXT LINE POINTER    FILE 20
0A73   7D             MOV  A,L      ;PUT LSB INTO A-REGISTER     FILE 20
0A74   EB             XCHG                                       FILE 20
0A75   2AC9FF         LHLD LTLIN    ;GET CURRENT LINE ADDRESS    FILE 20
0A78   EB             XCHG                                       FILE 20
0A79   22C9FF         SHLD LTLIN    ;SET NEW CURRENT LINE ADDRES FILE 20
0A7C   CD940A         CALL LNIN1    ;ADD LINE TO DISPLAY LIST    FILE 20
```

```
                                                                  FILE 20
                                                                  FILE 20
                                                                  FILE 20
                                                                  FILE 20
                                                                  FILE 20
                  ;****************************                   FILE 20
                  ; UPDATE TOPLIN IF ROW ZERO *                   FILE 20
                  ;****************************                   FILE 20
0A7F              LNINO   EQU  $                                  FILE 20
0A7F   CDF80A             CALL LTLU2     ;SET INITIAL LINE STATE  FILE 20
0A82   CD771E             CALL CRPRT     ;SET CURSOR TO LEFT MARGIN  FILE 20
0A85   AF                 XRA  A         ;SET LAST COLUMN DONE TO FILE 20
0A86   32C8FF             STA  LTCOL       ;ZERO                  FILE 20
0A89   21C0FF             LXI  H,CRROW   ;GET CURRENT ROW NUMBER  FILE 20
0A8C   B6                 ORA  M         ;DID TOP ROW CHANGE?     FILE 20
0A8D   C0                 RNZ            ;NO - RETURN             FILE 20
0A8E   C3050F             JMP  TPUP1     ;YES - UPDATE TOP LINE VALUE  FILE 20
                  ;                                               FILE 20
                  ;****************************************        FILE 20
                  ; LININ1 - ADD LINE TO LINK LIST          *      FILE 20
                  ; ENTRY: D,E=NEXT PAGE FIELD ADDR IN LINE *      FILE 20
                  ;           BEFORE WHICH NEW LINE IS      *      FILE 20
                  ;           TO BE INSERTED                *      FILE 20
                  ;        A,B=NEXT PAGE FIELD ADDR OF LINE *      FILE 20
                  ;           TO BE INSERTED                       FILE 20
                  ;       EXIT :  C,B = A,B(ENTRY)                 FILE 20
                  ;                D-L DESTROYED                   FILE 20
                  ;****************************************        FILE 20
0A91              LNINA   EQU  $                                  FILE 20
0A91   7B                 MOV  A,E       ;PUT ROLLED LINE ADDRESS INT  FILE 20
0A92   42                 MOV  B,D         ;B,A                   FILE 20
0A93   EB                 XCHG           ;PUT CHAR ADDRESS INTO D,E  FILE 20
0A94              LNIN1   EQU  $                                  FILE 20
0A94   6B                 MOV L,E        ;UPDATE PREV LINE PTR    FILE 20
0A95   62                 MOV H,D        ;IN NEXT LINE            FILE 20
0A96   23                 INX  H           ;SET ADDRESS TO PREVIOUS  FILE 20
0A97   23                 INX  H             ;LINE POINTER        FILE 20
0A98   4E                 MOV C,M        ;GET ADDR OF PREV LINE   FILE 20
0A99   77                 MOV M,A        ;STORE ADDR OF NEW LINE  FILE 20
0A9A   23                 INX  H                                  FILE 20
0A9B   56                 MOV D,M                                 FILE 20
0A9C   70                 MOV M,B                                 FILE 20
                  ;*******************************                FILE 20
                  ; UPDATE NEXT/PREVIOUS POINTERS *                FILE 20
                  ; IN NEW LINE                   *                FILE 20
                  ;*******************************                FILE 20
0A9D   6F                 MOV L,A        ;GET ADDR OF NEXT LINE FIELD  FILE 20
0A9E   7C                 MOV A,H                                 FILE 20
0A9F   60                 MOV H,B                                 FILE 20
0AA0   1D                 DCR E          ;SKIP OVER POINTERS      FILE 20
0AA1   73                 MOV M,E        ;STORE NEXT LINE LSB'S   FILE 20
0AA2   23                 INX  H                                  FILE 20
0AA3   77                 MOV M,A        ;STORE NEXT LINE MSB'S   FILE 20
0AA4   23                 INX  H                                  FILE 20
0AA5   71                 MOV M,C        ;STORE PREV LINE LSB'S   FILE 20
0AA6   23                 INX  H                                  FILE 20
0AA7   72                 MOV M,D        ;STORE PREV LINE MSB'S   FILE 20
                  ;                                               FILE 20
                  ;*******************************                FILE 20
                  ; SEE IF NEW LINE IS FIRST LINE *                FILE 20
                  ;*******************************                FILE 20
0AA8   79                 MOV A,C        ;GET PREV LINE LSB'S     FILE 20
0AA9   B7                 ORA A          ;SET FLAGS               FILE 20
0AAA   7D                 MOV A,L        ;(PUT LSB OF ADDR IN A-REG)  FILE 20
0AAB   CAB90A             JZ  LI200      ;JUMP IF NEW LINE IS     FILE 20
```

```
                                                                  FILE 20
                                                                  FILE 20
                                                                  FILE 20
                  ;                    FIRST LINE                 FILE 20
                  ;*********************************              FILE 20
                  ; NEW LINE IS NOT FIRST LINE      *             FILE 20
                  ; LINK PREVIOUS LINE TO NEW LINE *              FILE 20
                  ;*********************************              FILE 20
 0AAE   D604            SUI 4         ;GET ADDR OF NEW LINE DATA  FILE 20
 0AB0   69              MOV L,C       ;GET ADDR OF NEXT PAGE FIELD FILE 20
 0AB1   62              MOV H,D       ;OF PREVIOUS LINE           FILE 20
 0AB2   4F              MOV  C,A         ;NEW LINE'S LSB TO C     FILE 20
 0AB3   23              INX  H        ;SET TO MSB PART OF FIELD   FILE 20
 0AB4   CD140F          CALL DSLNK    ;LINK PREV LINE TO NEW LINE FILE 20
 0AB7   0C              INR C                                     FILE 20
 0AB8   C9              RET           ;RETURN                     FILE 20
                  ;*************************                      FILE 20
                  ; NEW LINE IS FIRST LINE *                      FILE 20
                  ;*************************                      FILE 20
 0AB9             LI200  EQU $                                    FILE 20
 0AB9   D603            SUI 3         ;GET ADDR OF NEXT PAGE FIELD FILE 20
 0ABB   4F              MOV C,A       ;PUT LSB INTO C-REGISTER    FILE 20
 0ABC   6F              MOV  L,A         ;SET NEW FIRST LINE POINTER FILE 20
 0ABD   229FFF          SHLD FLINE                                FILE 20
 0AC0   C9              RET              ;RETURN                  FILE 20
                  ;                                               FILE 20
                  ;**********************                         FILE 20
                  ; LINE FEED PROCESSOR *                         FILE 20
                  ;**********************                         FILE 20
 0AC1             CNDLF  EQU $                                    FILE 20
 0AC1   3AFBFF          LDA  KJMPR    ;GET THE STRAP SETTINGS     FILE 20
 0AC4   E604            ANI LNWRP        ;WRAP AROUND ENABLED?    FILE 20
 0AC6   C8              RZ            ;YES - LF NOT REQUIRED      FILE 20
 0AC7             LFEED  EQU $                                    FILE 20
 0AC7   216CFF          LXI  H,SPOWL  ;CLEAR SPOW LATCH           FILE 20
 0ACA   36FF            MVI  M,SOWOF                              FILE 20
 0ACC   2EC0            MVI  L,CRROW-BASE   ;GET CURSOR ROW       FILE 20
 0ACE   7E              MOV A,M                                   FILE 20
 0ACF   FE17            CPI MXROW     ;IS CURSOR IN BOTTOM ROW?   FILE 20
 0AD1   CAD90A          JZ   LF100       ;YES - ROLL UP THE DISPLAY FILE 20
 0AD4   3C              INR  A           ;NO - MOVE CURSOR TO NEXT RO FILE 20
 0AD5   77              MOV  M,A      ;STORE NEW ROW NUMBER       FILE 20
 0AD6   322780          STA  ICRRW    ;SET SCREEN CURSOR          FILE 20
 0AD9             LF100  EQU  $                                   FILE 20
 0AD9   CC5B0C          CZ   RLLUP        ;(ROLL UP IF AT BOTTOM) FILE 20
                  ;                                               FILE 20
                  ;  BUILD FIRST BLOCK OF NEW ROW IF NECESSARY    FILE 20
                  ;                                               FILE 20
 0ADC   3A70FF          LDA  MFLGS    ;GET BLOCK XFR PENDING FLAGS FILE 20
 0ADF   E640            ANI  SNTER/256   ;ENTER PENDING?          FILE 20
 0AE1   C0              RNZ              ;YES - DO NOT BUILD NEW ROW FILE 20
 0AE2   3A64FF          LDA  IFLG2    ;NO - GET I/O FLAGS         FILE 20
 0AE5   E620            ANI  XS2BF    ;DISPLAY TO I/O BUFFER?     FILE 20
 0AE7   C0              RNZ           ;YES - DO NOT BUILD NEW ROW FILE 20
                  ;                                               FILE 20
                  ;  ACQUIRE MEMORY FOR EDIT MODE IF NEEDED       FILE 20
                  ;                                               FILE 20
 0AE8   3EFF            MVI  A,-1     ;LOCATE BEGINNING OF NEW    FILE 20
 0AEA   CD6C07          CALL RADRO       ;ROW                     FILE 20
 0AED   CDC20F          CALL CEDIT    ;CHECK FOR SUFFICIENT FREE  FILE 20
 0AF0   C47F14          CNZ  FECNT                                FILE 20
 0AF3   C9              RET           ;RETURN                     FILE 20
                  ;                                               FILE 20
```

```
                                                                              FILE 20
                                                                              FILE 20
                                                                              FILE 20
                  ;                                                           FILE 20
                  ; * * * * * * * * * * * * * * * * * * * * * * * * *         FILE 20
                  ;                                                           FILE 20
                  ;  LSTLUP - UPDATE "LSTLIN"                                 FILE 20
                  ;                                                           FILE 20
                  ;      ENTRY:  H,L = ADDRESS TO BE STORED                   FILE 20
                  ;                                                           FILE 20
                  ;      EXIT :  D,E = LSTLIN = H,L(ENTRY)                    FILE 20
                  ;              A,H,L DESTROYED                              FILE 20
                  ;              LSTDCD = 0                                   FILE 20
                  ;               PROFLD SET TO INDICATE PROTECTED            FILE 20
                  ;                FIELD OF FORMAT MODE ENABLED               FILE 20
                  ;                                                           FILE 20
 0AF4             LTLUP   EQU  $                                              FILE 20
 0AF4   22C9FF            SHLD LTLIN      ;SET NEW "LSTLIN" VALUE             FILE 20
 0AF7             LTLU1   EQU  $                                              FILE 20
 0AF7   EB                XCHG            ;PUT "LSTLIN" VALUE INTO D,E        FILE 20
 0AF8             LTLU2   EQU  $                                              FILE 20
 0AF8   AF                XRA  A          ;CLEAR LAST DISPLAY CODE            FILE 20
 0AF9   32C6FF            STA  LTDCD                                          FILE 20
 0AFC   3EC0              MVI  A,STPR     ;INITIALIZE LAST FORMAT             FILE 20
 0AFE   32C5FF            STA  LTFMT        ;CONTROL CODE TO "STPR"           FILE 20
 0B01   CD7317            CALL CKFMS    ;FORMAT MODE?                         FILE 20
 0B04   C8                RZ            ;NO - RETURN                          FILE 20
 0B05   3EFF              MVI  A,-1       ;YES - SET PROTECT FLAG TO          FILE 20
 0B07   32C2FF            STA  POFLD        ;INDICATE PROTECTED FIELD         FILE 20
 0B0A   216707            LXI  H,ZETRN    ;INITIALIZE FIELD CHECKING          FILE 20
 0B0D   2286FF            SHLD CKRTN        ;ROUTINE                          FILE 20
 0B10   C9                RET                                                 FILE 20
                  ;                                                           FILE 20
                  ;******************                                         FILE 20
                  ; MEMORY LOCK OFF *                                         FILE 20
                  ;******************                                         FILE 20
 0B11             MKOFO   EQU  $                                              FILE 20
 0B11   3A6BFF            LDA  MKROW      ;GET MEMORY LOCK ROW                FILE 20
 0B14   B7                ORA  A          ;SET FOR FULL LOCK OUT?             FILE 20
 0B15   C23510            JNZ  MLKOF      ;NO - CLEAR LOCK OUT ONLY           FILE 20
 0B18             MKOFF   EQU  $          ;YES - TURN OFF MEMORY LOCK         FILE 20
 0B18   210000            LXI  H,0        ;SET MEMORY LOCK ROW AND            FILE 20
 0B1B   226AFF            SHLD MKFLG        ;FLAG TO ZERO                     FILE 20
 0B1E   3E04              MVI  A,MMLOK    ;TURN OFF MEMORY LOCK               FILE 20
 0B20   C31170            JMP  ZLMD1        ;FLAG                             FILE 20
                  ;*****************                                          FILE 20
                  ; MEMORY LOCK ON *                                          FILE 20
                  ;*****************                                          FILE 20
 0B23             MLKON   EQU  $                                              FILE 20
 0B23   3AC0FF            LDA  CRROW      ;GET CURRENT CURSOR ROW             FILE 20
 0B26   B7                ORA  A          ;SET FOR OVERFLOW INHIBIT?          FILE 20
 0B27   C22E0B            JNZ  M0005      ;NO - SET MEMORY LOCK ROW           FILE 20
 0B2A   CDC20F            CALL CEDIT      ;EDIT MODE?                         FILE 20
 0B2D   C0                RNZ             ;YES - DON'T ALLOW LOCK OUT         FILE 20
 0B2E             M0005   EQU  $          ;NO - SET MEMORY LOCK ROW           FILE 20
 0B2E   326BFF            STA  MKROW                                          FILE 20
 0B31             M0010   EQU  $                                              FILE 20
 0B31   3E04              MVI  A,MMLOK    ;TURN MEMORY LOCK FLAG              FILE 20
 0B33   0600              MVI  B,0          ;ON AND DON'T BLINK LED           FILE 20
 0B35   216AFF            LXI  H,MKFLG      ;(CLEAR THE MEMORY LOCK           FILE 20
 0B38   70                MOV  M,B           ;FLAG)                           FILE 20
 0B39   C30E70            JMP  ZTMD1                                          FILE 20
                  ;                                                           FILE 20
```

```
                    ;**********************************                  FILE 20
                    ; MLKSCH - LOCATE MEMORY LOCK ROW *                  FILE 20
                    ;**********************************                  FILE 20
                    ;                                                    FILE 20
                    ;   ENTRY:  DON'T CARE                               FILE 20
                    ;                                                    FILE 20
                    ;   EXIT :  Z - MEMORY LOCK ROW NOT FOUND            FILE 20
                    ;             A,C,H,L DESTROYED                      FILE 20
                    ;           NZ - MEMORY LOCK ROW FOUND               FILE 20
                    ;             H,L = ADDRESS OF LAST LOCK ROW         FILE 20
                    ;               (POINTS TO LSB OF NEXT LINE          FILE 20
                    ;                POINTER)                            FILE 20
                    ;             A,C DESTROYED                          FILE 20
                    ;                                                    FILE 20
0B3C                MKSC0  EQU  $          ;LOCATE FIRST UNLOCKED ROW    FILE 20
0B3C    3A6BFF             LDA  MKROW      ;GET MEMORY LOCK ROW          FILE 20
0B3F    B7                 ORA  A          ;SET FOR PARTIAL SCREEN LOCK  FILE 20
0B40    2ACBFF             LHLD TPLIN        ;(SET FOR TOP DISPLAY LINE  FILE 20
0B43    CA590B             JZ   NEXIT      ;NO - RETURN FOUND (NZ)       FILE 20
                    ;                      YES - LOCATE MEMORY LOCK ROW  FILE 20
0B46                MKSCH  EQU  $                                        FILE 20
0B46    3A6BFF             LDA  MKROW   ;GET MEMORY LOCK ROW             FILE 20
0B49    B7                 ORA  A          ;SET FOR PARTIAL SCREEN LOCK  FILE 20
0B4A    C8                 RZ              ;NO - RETURN                  FILE 20
                    ;*****************                                   FILE 20
                    ; SEARCH FOR ROW *                                   FILE 20
                    ;*****************                                   FILE 20
0B4B    2ACBFF             LHLD TPLIN      ;GET TOP LINE ADDRESS         FILE 20
0B4E                MKSC1  EQU  $          ;LOCATE LINE (A-REG)          FILE 20
0B4E    4F                 MOV  C,A        ;PUT LINE NUMBER IN C-REG     FILE 20
0B4F                MS120  EQU  $                                        FILE 20
0B4F    CD6A17             CALL CHAIN      ;GET ADDRESS OF NEXT LINE     FILE 20
0B52    B7                 ORA  A          ;DOES NEXT LINE EXIST?        FILE 20
0B53    C8                 RZ              ;NO - RETURN FAIL (Z)         FILE 20
0B54    23                 INX  H          ;YES - SET TO NEXT LINE PTR   FILE 20
0B55    0D                 DCR  C          ;ALL LINES FOUND?             FILE 20
0B56    C24F0B             JNZ  MS120      ;NO - DO NEXT LINE            FILE 20
                    ;                                                    FILE 20
0B59                NEXIT  EQU  $                                        FILE 20
0B59    F6FF               ORI  377Q       ;SET NZ, S                    FILE 20
0B5B    C9                 RET          ;RETURN(ZERO FLAG FALSE)         FILE 20
                    ;                                                    FILE 20
                    ;*******************************************         FILE 20
                    ; MLOCK - TURN ON MEMORY LOCK FULL CONDITION *        FILE 20
                    ;*******************************************         FILE 20
                    ;                                                    FILE 20
                    ;   ENTRY:  DON'T CARE                               FILE 20
                    ;                                                    FILE 20
                    ;   EXIT :  A = 0                                    FILE 20
                    ;           Z = T                                    FILE 20
                    ;           MLKTMR = -1 (377B)                       FILE 20
                    ;                                                    FILE 20
0B5C                MOCK0  EQU  $                                        FILE 20
0B5C    CD8917             CALL CKSFK                                    FILE 20
0B5F    37                 STC             ;SET SOFT KEY FLAG            FILE 20
0B60    C2211E             JNZ  SWAP1      ;YES SWAP                     FILE 20
0B63                MLOCK  EQU  $                                        FILE 20
0B63    216AFF             LXI  H,MKFLG    ;SET H,L TO MEMORY LOCK FLAG  FILE 20
0B66    B6                 ORA  M          ;MEMORY ALREADY LOCKED?       FILE 20
0B67    C2750B             JNZ  MK010      ;YES - DON'T SOUND BELL       FILE 20
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                                                                                  FILE 20
8080 MACRO ASSEMBLER, VER 2.4          ERRORS = 0 PAGE 60                         FILE 20
                                                                                  FILE 20
                                                                                  FILE 20
                                                                                  FILE 20
  0B6A    3E04            MVI  A,MMLOK    ;NO - FORCE MEMORY LOCK ON              FILE 20
  0B6C    06FF            MVI  B,377Q       ;AND BLINKING                         FILE 20
  0B6E    70              MOV  M,B        ;SET MEMORY LOCK FLAG                   FILE 20
  0B6F    CD0E70          CALL ZTMD1                                              FILE 20
  0B72            MOCK1   EQU  $          ;SOUND BELL AND RETURN A = 0            FILE 20
  0B72    CD1470          CALL ZBELL      ;SOUND THE BELL                         FILE 20
  0B75            MK010   EQU  $                                                  FILE 20
  0B75    AF              XRA  A          ;SET Z-FLAG                             FILE 20
  0B76    219AFF          LXI  H,NROWS      ;(SET H TO DATA PAGE)                 FILE 20
  0B79    77              MOV  M,A        ;CLEAR NROWS FOR RCADDR                 FILE 20
  0B7A    C9              RET             ;RETURN (A = 0, Z= T)                   FILE 20
  0B7B    00              NOP             ;NOP FOR PATCH TO "PT772"               FILE 20
                  ;                                                               FILE 20
                  ;                                                               FILE 20
                  ; * * * * * * * * * * * * * * * * * * * * * * * * *             FILE 20
                  ;                                                               FILE 20
                  ;  MOVCHR - MOVE CHARACTER STRING                               FILE 20
                  ;                                                               FILE 20
                  ;       ENTRY:  H,L = SOURCE POINTER                            FILE 20
                  ;               B,C = DESTINATION POINTER                       FILE 20
                  ;                                                               FILE 20
                  ;       EXIT :  B,C = NEXT STORAGE LOCATION                     FILE 20
                  ;               H,L = END OF SOURCE STRING                      FILE 20
                  ;               Z - TERMINATED BY A NULL BYTE                   FILE 20
                  ;               NZ - TERMINATED BY AN EOP                       FILE 20
                  ;                                                               FILE 20
  0B7C            MVCHR   EQU  $                                                  FILE 20
  0B7C    7E              MOV  A,M        ;GET DATA BYTE                          FILE 20
  0B7D    B7              ORA  A          ;IS IT A NULL?                          FILE 20
  0B7E    C8              RZ              ;YES - RETURN (Z - TRUE)                FILE 20
  0B7F    02              STAX B          ;NO - STORE THE BYTE                    FILE 20
  0B80    23              INX  H          ;INCREMENT TO NEXT SOURCE BY            FILE 20
  0B81    0B              DCX  B          ;DECREMENT TO NEXT DEST BYTE            FILE 20
  0B82    FECE            CPI  EOP        ;WAS LAST BYTE AN EOP?                  FILE 20
  0B84    C27C0B          JNZ  MVCHR      ;NO - DO NEXT BYTE                      FILE 20
  0B87    B7              ORA  A          ;YES - SET Z-FALSE                      FILE 20
  0B88    C9              RET             ;RETURN                                 FILE 20
                  ;************                                                    FILE 20
                  ; NEXT PAGE *                                                     FILE 20
                  ;************                                                    FILE 20
  0B89            NXTPG   EQU $                                                   FILE 20
  0B89    3E18            MVI  A,MXROW+1    ;COMPUTE NUMBER OF LINES              FILE 20
  0B8B    2E6B            MVI  L,MKROW        ;TO ROLL UP                         FILE 20
  0B8D    96              SUB  M                                                  FILE 20
  0B8E    CDA10B          CALL NT100                                              FILE 20
  0B91            NT040   EQU  $                                                  FILE 20
  0B91    3A6BFF          LDA  MKROW      ;SET CURRENT CURSOR POSITION            FILE 20
  0B94    32C0FF          STA  CRROW        ;TO MEMORY LOCK ROW AND               FILE 20
  0B97    CD771E          CALL CRPRT        ;LEFT MARGIN                          FILE 20
  0B9A    CD7317          CALL CKFMS      ;FORMAT/SOFT KEY DEFINE MODE            FILE 20
  0B9D    C2461A          JNZ  FLDSR      ;YES - TAB TO NEXT FIELD                FILE 20
  0BA0    C9              RET             ;NO - RETURN                            FILE 20
                  ;                                                               FILE 20
                  ;                                                               FILE 20
                  ; * * * * * * * * * * * * * * * * * * * * * * * * *             FILE 20
                  ;                                                               FILE 20
                  ;  NXTPG1 - ROLL UP N LINES                                     FILE 20
                  ;                                                               FILE 20
                  ;       ENTRY:  A = NUMBER OF ROWS TO ROLL UP                   FILE 20
                  ;               H = BASEH                                       FILE 20
```

```
                        ;
                        ;      EXIT :  C = NUMBER OF LINES ROLLED
                        ;              H,L = NMROLL+
                        ;              A,B,D,E DESTROYED
  0BA1                  NT100  EQU $
  0BA1                  NTPG1  EQU $
  0BA1     4F                  MOV  C,A       ;PUT ROLL PARAMETER IN C-REG
  0BA2     2E82                MVI  L,RLLCT   ;SAVE ROLL PARAMETER
  0BA4     71                  MOV  M,C
  0BA5     23                  INX  H
  0BA6                  NT110  EQU  $
  0BA6     71                  MOV  M,C
  0BA7     CD5B0C              CALL RLLUP     ;ROLL UP SUCCESSFUL?
  0BAA     2182FF              LXI  H,RLLCT     ;(RECALL ROLL COUNT)
  0BAD     4E                  MOV  C,M
  0BAE     CAB50B              JZ   NT120     ;NO - EXIT
  0BB1     0D                  DCR  C         ;ALL LINES DONE?
  0BB2     C2A60B              JNZ  NT110     ;NO - ROLL UP ANOTHER LINE
                        ;                     YES - EXIT (C = 0)
                        ;*****************************************
                        ; TERMINATE ROLL UP - RETURN NUMBER OF LINES *
                        ;   ROLLED                                 *
                        ;*****************************************
  0BB5                  NT120  EQU  $
  0BB5     23                  INX  H         ;GET NUMBER OF LINES TO BE
  0BB6     7E                  MOV  A,M         ;ROLLED UP
  0BB7     91                  SUB  C         ;COMPUTE ACTUAL NUMBER DONE
  0BB8     4F                  MOV  C,A       ;RETURN VALUE IN C-REGISTER
  0BB9     C9                  RET            ;RETURN
                        ;
                        ;******************************************
                        ; NXTCHR - GET NEXT CHARACTER IN DISPLAY LIST *
                        ;******************************************
                        ;
                        ;  ENTRY:  D,E = ADDRESS OF CURRENT CHARACTER
                        ;
                        ;  EXIT :  Z = T, CHARACTER IS NOT AN EOL LINK
                        ;                 A = DISPLAY CHARACTER
                        ;                 D,E = ADDRESS OF CHARACTER
                        ;               F, NEXT CHARACTER IS EOL LINK
                        ;                 A DESTROYED
                        ;                 D,E = ADDRESS OF NEXT LINE LINK
                        ;
  0BBA                  NTCH0  EQU  $
  0BBA     EB                  XCHG           ;PUT POINTER INTO D,E
  0BBB                  NTCHR  EQU  $
  0BBB     1B                  DCX  D         ;GET THE NEXT DISPLAY
  0BBC     1A                  LDAX D           ;CHARACTER
  0BBD     FED0                CPI  LKLIM     ;IS IT A LINK?
  0BBF     DACD0B              JC   NH010     ;NO - EXIT
  0BC2     EB                  XCHG           ;YES - GET NEW ADDRESS
  0BC3     2B                  DCX  H         ;GET LSB OF LINK
  0BC4     6E                  MOV  L,M
  0BC5     67                  MOV  H,A
  0BC6     EB                  XCHG           ;PUT ADDRESS INTO D,E
  0BC7     7B                  MOV  A,E       ;PUT LSB INTO A-REGISTER
  0BC8     2F                  CMA            ;END OF LINE LINK (LOWER FOU
  0BC9     E60F                ANI  BLKSM       ;BITS NOT ALL ONES)?
  0BCB     C0                  RNZ            ;YES - RETURN Z FALSE
  0BCC     1A                  LDAX D         ;NO - GET THE DATA BYTE
```

FILE 20 (repeated down the right margin on every line)

```
                          ;                                          FILE 20
OBCD                      NH010  EQU  $                              FILE 20
OBCD      BF                     CMP  A          ;SET Z TRUE         FILE 20
OBCE      C9                     RET             ;RETURN             FILE 20
                          ;                                          FILE 20
                          ;****************************              FILE 20
                          ; PAROUT - SEND STATUS BITS *              FILE 20
                          ;****************************              FILE 20
                          ;                                          FILE 20
                          ;  ENTRY:  A = PARITY BITS TO BE SENT      FILE 20
                          ;                                          FILE 20
                          ;  EXIT :  A-E DESTROYED                   FILE 20
                          ;                                          FILE 20
OBCF                      PROT4  EQU  $          ;ROTATE DOWN 4 BITS FIRST  FILE 20
OBCF      OF                     RRC                                 FILE 20
OBD0                      PROT3  EQU $                               FILE 20
OBD0      OF                     RRC                                 FILE 20
OBD1                      PROT2  EQU $                               FILE 20
OBD1      OF                     RRC                                 FILE 20
OBD2                      PROT1  EQU $                               FILE 20
OBD2      OF                     RRC                                 FILE 20
OBD3                      PROUT  EQU $                               FILE 20
OBD3      E60F                   ANI 17Q      ;GET BITS 0-3          FILE 20
OBD5      C630                   ADI  ZERO      ;ADD IN ZERO BASE TO FORCE  FILE 20
OBD7      E5                     PUSH H            ;DISPLAYABLE CHARACTER   FILE 20
OBD8      CDCDFF                 CALL EONTF      ;PERFORM OUTPUT FUNCTION   FILE 20
OBDB      E1                     POP  H          ;RESTORE H,L        FILE 20
OBDC      C9                     RET             ;RETURN             FILE 20
                          ;                                          FILE 20
                          ;****************                          FILE 20
                          ; PREVIOUS PAGE *                          FILE 20
                          ;****************                          FILE 20
OBDD                      PEVPG  EQU $                               FILE 20
OBDD      3EE8                   MVI  A,-MXROW-1                     FILE 20
OBDF      2E6B                   MVI  L,MKROW    ;COMPUTE NUMBER OF ROWS TO  FILE 20
OBE1      86                     ADD  M             ;ROLL DOWN       FILE 20
OBE2      CDEA0B                 CALL PV100                          FILE 20
OBE5      C3910B                 JMP NT040                           FILE 20
                          ;                                          FILE 20
                          ;  PRVPG1 - ROLL DOWN FOR CURSOR POSITIONING  FILE 20
                          ;                                          FILE 20
                          ;      ENTRY:  H,L = CURROW+               FILE 20
                          ;                                          FILE 20
OBE8                      PVPG1  EQU $                               FILE 20
OBE8      3600                   MVI M,0      ;SET CURRENT ROW TO ZERO  FILE 20
                          ;                                          FILE 20
                          ; * * * * * * * * * * * * * * * * * * * * * * * * *  FILE 20
                          ;                                          FILE 20
                          ;  PRV100 - ROLL DOWN N LINES              FILE 20
                          ;                                          FILE 20
                          ;      ENTRY:  A = -NUMBER OF LINES TO ROLL DOWN  FILE 20
                          ;              H = BASEH                   FILE 20
                          ;                                          FILE 20
                          ;      EXIT :  A-L DESTROYED               FILE 20
                          ;                                          FILE 20
                          ;                                          FILE 20
OBEA                      PV100  EQU $                               FILE 20
OBEA      3282FF                 STA  RLLCT    ;SAVE THE ROLL COUNT  FILE 20
OBED                      PV110  EQU  $                              FILE 20
OBED      CDF90B                 CALL RLLDN      ;LINE ROLLED DOWN?  FILE 20
```

```
                                                                FILE 20
                                                                FILE 20
                                                                FILE 20
                                                                FILE 20
0BF0   2182FF          LXI  H,RLLCT   ;(SET H TO DATA PAGE)     FILE 20
0BF3   C8              RZ             ;NO - RETURN              FILE 20
0BF4   34              INR  M         ;ALL LINES DONE?          FILE 20
0BF5   C2ED0B          JNZ  PV110     ;NO - DO ANOTHER LINE     FILE 20
0BF8   C9              RET            ;YES - RETURN             FILE 20
                ;                                               FILE 20
                ;*************************************          FILE 20
                ; ROLLDN - ROLL DISPLAY DOWN ONE LINE *         FILE 20
                ;*************************************          FILE 20
                ;                                               FILE 20
                ;  ENTRY:  DON'T CARE                           FILE 20
                ;                                               FILE 20
                ;  EXIT :  NZ - ROLL DOWN SUCCESSFUL            FILE 20
                ;           Z - ROLL DOWN FAILED                FILE 20
                ;          ALL REGISTERS DESTROYED              FILE 20
                ;                                               FILE 20
0BF9            RLLDN  EQU $                                    FILE 20
0BF9   CD460B          CALL MKSCH                               FILE 20
0BFC   CA230C          JZ  RD080                                FILE 20
                ;************************                       FILE 20
                ; MEMORY LOCK ROLL DOWN *                       FILE 20
                ;************************                       FILE 20
0BFF   EB              XCHG           ;LAST LOCKED LINE ADDR TO D,    FILE 20
0C00   2ACBFF          LHLD TPLIN     ;GET TOP LINE ADDRESS           FILE 20
0C03   23              INX  H         ;SET ADDRESS TO PREVIOUS LIN    FILE 20
0C04   23              INX  H           ;POINTER                      FILE 20
0C05   CD6A17          CALL CHAIN     ;GET PREVIOUS LINE'S ADDRESS    FILE 20
0C08   B7              ORA  A         ;PREVIOUS LINE EXIST?           FILE 20
0C09   C8              RZ             ;NO - RETURN                    FILE 20
0C0A   D5              PUSH D         ;YES - ROLL DOWN THE LINE       FILE 20
0C0B   CD320A          CALL LNDLO     ;DELETE 1ST LINE ABOVE DISP     FILE 20
0C0E   21A3FF          LXI  H,TLINO   ;DECREMENT TOP LINE             FILE 20
0C11   35              DCR  M           ;NUMBER                       FILE 20
0C12   E1              POP  H         ;RECALL LAST LOCKED LINE ADD    FILE 20
0C13   CD910A          CALL LNINA     ;ADD LINE BELOW LOCKED LINES    FILE 20
0C16   3A6BFF          LDA  MKROW     ;GET LOCK ROW NUMBER            FILE 20
0C19   3D              DCR  A         ;ADJUST FOR COMPARE             FILE 20
0C1A   21C7FF          LXI  H,LTROW   ;COMPARE TO LAST ROW DONE       FILE 20
0C1D   BE              CMP M        ;DID IT ROLL DOWN?                FILE 20
0C1E   FA4C0C          JM   RD090     ;YES - UPDATE DISPLAY PTRS      FILE 20
0C21   B4              ORA  H         ;NO - FORCE NZ AND EXIT         FILE 20
0C22   C9              RET            ;RETURN                         FILE 20
                ;                                                     FILE 20
                ;*******************                                  FILE 20
                ; NORMAL ROLL DOWN *                                  FILE 20
                ;*******************                                  FILE 20
0C23            RD080  EQU $                                          FILE 20
0C23   3A6BFF          LDA  MKROW     ;GET MEMORY LOCK ROW            FILE 20
0C26   B7              ORA  A         ;IS IT ZERO?                    FILE 20
0C27   CA3E0C          JZ   RD085     ;YES - DO NORMAL ROLL DOWN      FILE 20
0C2A   21C0FF          LXI  H,CRROW   ;NO - TRY TO ALLOCATE LINES     FILE 20
0C2D   46              MOV  B,M         ;TO MEMORY LOCK ROW           FILE 20
0C2E   77              MOV  M,A                                       FILE 20
0C2F   C5              PUSH B         ;SAVE CURRENT ROW NUMBER        FILE 20
0C30   3EFF            MVI  A,-1        ;(SET FOR COLUMN ZERO)        FILE 20
0C32   CD6C07          CALL RADRO     ;IS MEMORY AVAILABLE?           FILE 20
0C35   C1              POP  B           ;(RESTORE CURRENT ROW         FILE 20
0C36   78              MOV  A,B             ;NUMBER)                  FILE 20
0C37   32C0FF          STA  CRROW                                     FILE 20
0C3A   C0              RNZ            ;NO - RETURN FAIL               FILE 20
```

```
                                                                  FILE 20
8080 MACRO ASSEMBLER, VER 2.4            ERRORS = 0 PAGE 64      FILE 20
                                                                  FILE 20
                                                                  FILE 20
                                                                  FILE 20
 0C3B    C3F90B          JMP   RLLDN      ;YES - RETRY MEMORY LOCK ROL   FILE 20
                ;                                                 FILE 20
                ;  DISPLAY NOT LOCKED - DO NORMAL ROLL DOWN       FILE 20
                ;                                                 FILE 20
 0C3E           RD085   EQU  $                                    FILE 20
 0C3E    2ACBFF          LHLD TPLIN      ;GET TOP LINE ADDRESS    FILE 20
 0C41    23              INX  H          ;SET TO PREVIOUS LINE    FILE 20
 0C42    23              INX  H            ;ADDRESS               FILE 20
 0C43    B6              ORA  M          ;ANY PREVIOUS LINES?     FILE 20
 0C44    C8              RZ              ;NO - DON'T DO ROLL DOWN FILE 20
                ;                         YES - ROLL ONE LINE DOWN FILE 20
                ;****************************                     FILE 20
                ; TOP LINE IS NOT FIRST LINE *                    FILE 20
                ; ADVANCE POINTERS           *                    FILE 20
                ;****************************                     FILE 20
 0C45    16FF            MVI D,-1      ;FLAG TO DECREMENT TLINO   FILE 20
 0C47    CDF80E          CALL TPUPD    ;UPDATE TOP LINE POINTERS  FILE 20
 0C4A    2EC7            MVI  L,LTROW-BASE    ;GET LAST ROW PROCESSED  FILE 20
 0C4C           RD090   EQU $                                     FILE 20
 0C4C    7E              MOV A,M                                  FILE 20
 0C4D    3C              INR  A          ;INCREMENT               FILE 20
 0C4E    FE18            CPI MXROW+1                              FILE 20
 0C50    C2E415          JNZ SOREA     ;NOT ROLL OFF - STORE ROW  FILE 20
 0C53    2AC9FF          LHLD LTLIN      ;GET ADDR OF LAST LINE DONE  FILE 20
 0C56    23              INX  H          ;SET TO PREVIOUS LINE    FILE 20
 0C57    23              INX  H            ;ADDRESS               FILE 20
 0C58    C3870C          JMP RL200                                FILE 20
                ;                                                 FILE 20
                ;************************************             FILE 20
                ; ROLLUP - ROLL UP DISPLAY ONE LINE *             FILE 20
                ;************************************             FILE 20
 0C5B           RLLUP   EQU $                                     FILE 20
 0C5B    CD460B          CALL MKSCH                               FILE 20
 0C5E    CA9A0C          JZ   RL080                               FILE 20
                ;**********************                           FILE 20
                ; MEMORY LOCK ROLL-UP *                           FILE 20
                ;**********************                           FILE 20
 0C61    7E              MOV A,M       ;IS THERE A NEXT LINE?     FILE 20
 0C62    B7              ORA A                                    FILE 20
 0C63    C8              RZ              ;NO - DON'T DO ROLL UP   FILE 20
 0C64    CD320A          CALL LNDLO      ;YES - REMOVE FIRST UNLOCKED  FILE 20
 0C67    21A3FF          LXI  H,TLINO      ;LINE                  FILE 20
 0C6A    34              INR  M          ;INCREMENT TOP LINE NUMBER  FILE 20
 0C6B    2ACBFF          LHLD TPLIN      ;GET TOP DISPLAY LINE ADDRES  FILE 20
 0C6E    3A6BFF          LDA  MKROW      ;FORCE END-OF-PAGE IF DISPLA  FILE 20
 0C71    F620            ORI  MYEOP        ;IS CURRENTLY REFRESHING  FILE 20
 0C73    322780          STA  ICRRW        ;MEMORY LOCK BOUNDARY ROW  FILE 20
 0C76    CD910A          CALL LNINA      ;ADD LINE ABOVE DISPLAY  FILE 20
 0C79    3A6BFF          LDA  MKROW    ;GET LOCK ROW NUMBER       FILE 20
 0C7C    21C7FF          LXI  H,LTROW    ;GET LAST ROW PROCESSED  FILE 20
 0C7F    96              SUB  M            ;DID IT ROLL UP?       FILE 20
 0C80    FAA80C          JM   RL090        ;YES - UPDATE LINE POINTER  FILE 20
 0C83    C0              RNZ               ;NO - RETURN (Z = FALSE)  FILE 20
 0C84    77              MOV  M,A          ;SAME - FORCE LAST ROW = 0  FILE 20
 0C85           RL100   EQU  $                                    FILE 20
 0C85    2ECB            MVI L,TPLIN   ;SET CURRENT LINE TO TOP LINE  FILE 20
 0C87           RL200   EQU $                                     FILE 20
 0C87    5E              MOV E,M                                  FILE 20
 0C88           RLUP2   EQU $                                     FILE 20
 0C88    2C              INR L                                    FILE 20
```

```
                                                                  FILE 20
                                                                  FILE 20
                                                                  FILE 20
                                                                  FILE 20
                                                                  FILE 20
0C89   56               MOV D,M                                   FILE 20
                ;                                                 FILE 20
                ;  ROLUP3 - UPDATE LSTLIN AND CURADR              FILE 20
                ;                                                 FILE 20
0C8A            RLUP3   EQU  $                                    FILE 20
0C8A   EB               XCHG            ;SET LSTLIN TO NEW ROW    FILE 20
0C8B            RLUPC   EQU  $                                    FILE 20
0C8B   CDF40A           CALL LTLUP                                FILE 20
0C8E   EB               XCHG            ;PUT NEW ROW ADDRESS INT H,L   FILE 20
0C8F   2B               DCX  H          ;SET TO LSB OF NEXT LINE PTR   FILE 20
0C90   22C3FF           SHLD CRADR      ;SET CURADR TO TOP LINE   FILE 20
0C93   EB               XCHG            ;RESTORE D,E AND H,L      FILE 20
0C94   AF               XRA  A          ;SET LAST COLUMN PROCESSED     FILE 20
0C95   32C8FF           STA  LTCOL        ;DONE TO ZERO           FILE 20
0C98   B3               ORA  E          ;SET Z-FLAG FALSE         FILE 20
0C99   C9               RET             ;RETURN                   FILE 20
                ;                                                 FILE 20
                ;*****************                                FILE 20
                ; NORMAL ROLL-UP *                                FILE 20
                ;*****************                                FILE 20
0C9A            RL080   EQU $                                     FILE 20
0C9A   2ACBFF           LHLD TPLIN      ;GET TOP LINE ADDRESS     FILE 20
0C9D   B6               ORA  M          ;IS TOP LINE LAST LINE?   FILE 20
0C9E   C8               RZ              ;YES - RETURN, DON'T ROLL UP   FILE 20
0C9F   1601             MVI  D,1        ;NO - SET D TO INCREMENT  FILE 20
                ;                         "TLINO"                 FILE 20
0CA1   3C               INR  A          ;SET LSB TO NEXT LINE POINTE   FILE 20
                ;*****************************                    FILE 20
                ; TOP LINE IS NOT LAST LINE *                     FILE 20
                ; ADVANCE POINTERS          *                     FILE 20
                ;*****************************                    FILE 20
0CA2            RLUP1   EQU $                                     FILE 20
0CA2   CDF80E           CALL TPUPD      ;UPDATE TOP LINE POINTERS FILE 20
0CA5   21C7FF           LXI  H,LTROW    ;GET LAST ROW # PROCESSED FILE 20
0CA8            RL090   EQU  $                                    FILE 20
0CA8   4E               MOV C,M                                   FILE 20
0CA9   0D               DCR C           ;DECREMENT                FILE 20
0CAA   FA850C           JM   RL100      ;LINE ROLLED OFF SCREEN   FILE 20
0CAD   71               MOV M,C         ;STORE UPDATED LSTROW     FILE 20
0CAE   B4               ORA H           ;SET Z-FLAG TO FALSE      FILE 20
0CAF   C9               RET                                       FILE 20
                ;                                                 FILE 20
                ;*****************                                FILE 20
                ; CHAR SET SELECT *                               FILE 20
                ;*****************                                FILE 20
0CB0            SHRST   EQU $                                     FILE 20
0CB0   21A724           LXI  H,CRSTB    ;SET FOR CHARACTER SET SELEC   FILE 20
0CB3   C3F504           JMP ECAPO                                 FILE 20
                ;                                                 FILE 20
                ;  SET NEW ALTERNATE CHARACTER SET                FILE 20
                ;                                                 FILE 20
0CB6            SHST1   EQU  $                                    FILE 20
0CB6   79               MOV  A,C        ;PUT INPUT CHARACTER IN A-RE   FILE 20
0CB7   E60F             ANI  17Q        ;EXTRACT CHARACTER SET NUMBE   FILE 20
0CB9   07               RLC             ;SHIFT TO POSITION FOR    FILE 20
0CBA   07               RLC               ;ALTERNATE CHARCTER SET FILE 20
0CBB   07               RLC                                       FILE 20
0CBC   07               RLC                                       FILE 20
0CBD   3272FF           STA  CRSET      ;STORE CHAR SET SELECT CTL     FILE 20
0CC0   C9               RET             ;RETURN                   FILE 20
```

```
                     ;
                     ;
                     ; * * * * * * * * * * * * * * * * * * * * * * * *
                     ;
                     ;  SFKYOF - PUT NORMAL DISPLAY ON SCREEN
                     ;
                     ;      ENTRY:  DON'T CARE
                     ;
                     ;      EXIT :  ALL REGISTERS DESTROYED
                     ;
 0CC1                SKYOF   EQU  $
 0CC1   CD8917               CALL CKSFK       ;NORMAL DISPLAY ENABLED?
 0CC4   C8                   RZ               ;YES - RETURN
 0CC5   3EF7                 MVI  A,377Q-DFSKY   ;NO - SWAP DISPLAY
 0CC7   CD5113               CALL CCMFL       ;CLEAR SOFT KEY MODE FLAG
 0CCA   CDBC0F               CALL CDSPF       ;DISPLAY FUNCTIONS ENABLED?
 0CCD   C2E20C               JNZ  S0010       ;YES - DON'T RESET RANGE TBL
 0CD0   21B323               LXI  H,RABLE     ;NO - RESTORE NORMAL
 0CD3   22D2FF               SHLD RNGTA         ;CHARACTER FUNCTION TABLE
 0CD6   C3E20C               JMP  S0010       ;TURN ON NORMAL DISPLAY
                     ;
                     ;****************************************
                     ; SFKYON - PUT SOFT KEY DISPLAY ON SCREEN *
                     ;****************************************
                     ;
                     ;  ENTRY:  DON'T CARE
                     ;
                     ;  EXIT :  NZ
                     ;          ALL REGISTERS DESTROYED
                     ;
 0CD9                SKYON   EQU  $
 0CD9   CD8917               CALL CKSFK       ;SOFT KEY DEFINE MODE?
 0CDC   C0                   RNZ              ;YES - RETURN
 0CDD   3E08                 MVI  A,DFSKY     ;NO - SWAP DISPLAY
 0CDF   CD7513               CALL SCMFL       ;SET SOFT KEY MODE FLAG
                     ;
                     ;  EXCHANGE DISPLAY
                     ;
 0CE2                S0010   EQU  $
 0CE2   CD1B1E               CALL SWAP        ;SWAP DISPLAY PARAMETERS
 0CE5   CD9019               CALL RTDSP       ;TURN ON THE DISPLAY
 0CE8   CDA21A               CALL FDSRX       ;RESCAN LINE TO SET PROPER
 0CEB   C30507               JMP  RADRA         ;FIELD ATTRIBUTE
                     ;*******************************************
                     ; SFKYDS - DISPLAY CHARACTER IN SOFT KEY MODE *
                     ;*******************************************
                     ;
                     ;  ENTRY:  DCHAR = CHARACTER TO BE DISPLAYED
                     ;
                     ;  EXIT :  IF CHARACTER FROM KEYBOARD,
                     ;            CHARACTER IS ADDED TO DISPLAY
                     ;            OTHERWISE, NORMAL DISPLAY IS RESTORED
                     ;
 0CEE                SKYDS   EQU  $
 0CEE   CD8917               CALL CKSFK       ;SOFT KEY DEFINE MODE?
 0CF1   CA5720               JZ   DPCHR       ;NO - USE NORMAL ROUTINE
 0CF4   CD1B12               CALL DXB2D       ;INPUT FROM KEYBOARD?
 0CF7   C4C10C               CNZ  SKYOF       ;NO - SWAP DISPLAY
 0CFA   C25720               JNZ  DPCHR         ;AND USE NORMAL ROUTINE
 0CFD   C32B14               JMP  FESC1       ;YES - DISPLAY CHARACTER
```

```
                                                                   FILE 20
                                                                   FILE 20
                                                                   FILE 20
                                                                   FILE 20
                                                                   FILE 20
                ;                    AND KILL "CURADV" FLAG        FILE 20
                ;                                                  FILE 20
                ;**********************                            FILE 20
                ; SFTRST - SOFT RESET *                            FILE 20
                ;**********************                            FILE 20
0D00            STRST   EQU  $                                     FILE 20
0D00   CD5115           CALL IBSYC      ;WAIT UNTIL CTU'S FREE     FILE 20
0D03   F3               DI              ;DISABLE INTERRUPTS        FILE 20
0D04   3E01             MVI  A,1        ;SET RESET TIMER FOR ONE   FILE 20
0D06   32D0FF           STA  RTTMR        ;SECOND ONLY             FILE 20
0D09   C35501           JMP  GO1        ;DO SOFT RESET             FILE 20
                ;                                                  FILE 20
                ;*****************                                 FILE 20
                ; SO - SHIFT OUT *                                 FILE 20
                ;*****************                                 FILE 20
0D0C            SFTOT   EQU $                                      FILE 20
0D0C   CD8917           CALL CKSFK      ;DEFINE SOFT KEY MODE?     FILE 20
0D0F   C0               RNZ             ;YES - DON'T SWITCH CHAR SET FILE 20
0D10   3A72FF           LDA  CRSET   ;GET CURRENT ALT CHAR SET     FILE 20
0D13            SHFT1   EQU  $                                     FILE 20
0D13   47               MOV  B,A        ;PUT NEW CHAR SET IN B-REG FILE 20
0D14   3E0B             MVI  A,SCHAR    ;SET CHARACTER SWITCH IN   FILE 20
0D16   CD0870           CALL ZBCTL        ;KEYBOARD FOR POSSIBLE   FILE 20
                ;                    FOREIGN MODE ENABLE           FILE 20
0D19   78               MOV  A,B        ;RECALL NEW CHARACTER SET  FILE 20
0D1A            SHFT2   EQU  $          ;ENTRY FOR SELF-TEST       FILE 20
0D1A   060F             MVI  B,17Q      ;SET MASK TO SAVE DISPLAY  FILE 20
                ;                    ENHANCEMENT BITS              FILE 20
0D1C   C3921E           JMP  DSPC1      ;ADD CODE TO DISPLAY       FILE 20
                ;****************                                  FILE 20
                ; SI - SHIFT IN *                                  FILE 20
                ;****************                                  FILE 20
0D1F            SFTIN   EQU $                                      FILE 20
0D1F   CD8917           CALL CKSFK      ;DEFINE SOFT KEY MODE?     FILE 20
0D22   C0               RNZ             ;YES - DON'T SWITCH CHAR SET FILE 20
0D23   AF               XRA A        ;SET FOR BASE CHARACTER       FILE 20
0D24   C3130D           JMP  SHFT1        ;SET CODE                FILE 20
                ;                                                  FILE 20
                ;***********************************               FILE 20
                ; STATUS - RETURN TERMINAL STATUS *                FILE 20
                ;***********************************               FILE 20
0D27            SATUS   EQU  $                                     FILE 20
0D27   010002           LXI  B,SSTAT    ;SET BLOCK TRANSFER FOR    FILE 20
0D2A   C32616           JMP  SLXFO        ;FOR TERMINAL STATUS     FILE 20
                ;*************************************             FILE 20
                ; STATGO - TRANSMIT TERMINAL STATUS *              FILE 20
                ;*************************************             FILE 20
0D2D            SATGO   EQU  $                                     FILE 20
0D2D   01FFFD           LXI  B,-1-SSTAT                            FILE 20
0D30   CDE50F           CALL CBLXF      ;CLEAR STATUS PENDING FLAG FILE 20
0D33   065C             MVI  B,ACKSL    ;SEND <ESC>-<*>            FILE 20
0D35   CD0217           CALL ECOUT                                 FILE 20
0D38   210817           LXI  H,XUTDC    ;SET OUTPUT ROUTINE ADDRESS FILE 20
0D3B   CD480D           CALL SAPAR      ;OUTPUT STATUS BITS        FILE 20
0D3E   21F7FF           LXI  H,ERFLG    ;CLEAR DATA COMM ERROR FLAG FILE 20
0D41   7E               MOV  A,M                                   FILE 20
0D42   E6FE             ANI  377Q-DMERR                            FILE 20
0D44   77               MOV  M,A                                   FILE 20
0D45   C39211           JMP  STERM      ;SEND TERMINATOR AND RETURN FILE 20
                ;                                                  FILE 20
```

```
                                                                   FILE 20
                                                                   FILE 20
                                                                   FILE 20
                                                                   FILE 20
                                                                   FILE 20
                 ;*****************************                    FILE 20
                 ; STAPAR - OUTPUT STATUS BITS *                   FILE 20
                 ;*****************************                    FILE 20
                 ;                                                 FILE 20
                 ;  ENTRY:  H,L = ADDRESS OF OUTPUT ROUTINE        FILE 20
                 ;                                                 FILE 20
                 ;  EXIT :  CNTFAD = ADDRESS OF OUTPUT ROUTINE     FILE 20
                 ;          ALL REGISTERS DESTROYED                FILE 20
                 ;                                                 FILE 20
0D48             SAPAR  EQU  $                                     FILE 20
0D48   22CEFF           SHLD CTFAD     ;SET OUTPUT ROUTINE VECTOR  FILE 20
                 ;                                                 FILE 20
                 ;  OUTPUT SIZE OF RAM                             FILE 20
                 ;                                                 FILE 20
0D4B   3AABFF           LDA  DPBGN+1   ;COMPUTE NUMBER OF 256-BYTE FILE 20
0D4E   2F               CMA              ;RAM BLOCKS IN DISPLAY    FILE 20
0D4F   3C               INR  A           ;AREA                     FILE 20
0D50   CDD10B           CALL PROT2     ;TRANSMIT MEMORY SIZE IN K'S FILE 20
                 ;                                                 FILE 20
                 ;  OUTPUT KEYBOARD INTERFACE STRAP SETTINGS       FILE 20
                 ;                                                 FILE 20
0D53   3AFBFF           LDA  KJMPR     ;TRANSMIT STRAPS A-D        FILE 20
0D56   6F               MOV  L,A       ;SAVE JUMPER VALUES         FILE 20
0D57   CDD30B           CALL PROUT                                 FILE 20
0D5A   7D               MOV  A,L       ;RECALL JUMPER VALUES       FILE 20
0D5B   CDCF0B           CALL PROT4     ;TRANSMIT STRAPS E-H        FILE 20
                 ;                                                 FILE 20
                 ;  OUTPUT LATCHING KEYS STATUS                    FILE 20
                 ;                                                 FILE 20
0D5E   3AF3FF           LDA  MFLG2     ;GET TERMINAL MODE FLAGS 2  FILE 20
0D61   E607             ANI  CPSLK+BKMDE+ATOLF     ;EXTRACT BITS   FILE 20
0D63   F608             ORI  10Q       ;ADD BIT 3 TO INDICATE 2645 FILE 20
0D65   CDD30B           CALL PROUT     ;SEND LATCHING KEY STATUS   FILE 20
                 ;                                                 FILE 20
                 ;  OUTPUT TERMINAL (2640) TRANSFER PENDING FLAGS  FILE 20
                 ;                                                 FILE 20
0D68   2A6FFF           LHLD MLGS2     ;GET TERMINAL MODE FLAGS    FILE 20
0D6B   7C               MOV  A,H       ;MASK FOR SECONDARY STATUS  FILE 20
0D6C   E604             ANI  STAT2/256   ;PENDING BIT              FILE 20
0D6E   0F               RRC            ;SHIFT BIT INTO STATUS      FILE 20
0D6F   0F               RRC              ;RESPONSE POSITION        FILE 20
0D70   0F               RRC                                        FILE 20
0D71   47               MOV  B,A                                   FILE 20
0D72   7C               MOV  A,H       ;GET OTHER DISPLAY RELATED  FILE 20
0D73   E670             ANI  160Q      ;(SNTER+SCTKY+SRSEN/256) XFR BITS  FILE 20
0D75   B0               ORA  B         ;ADD IN SECONDARY STATUS    FILE 20
0D76   CDCF0B           CALL PROT4     ;SEND TRANSFER PENDING BITS FILE 20
                 ;                                                 FILE 20
                 ;                                                 FILE 20
                 ;  OUTPUT ERROR CONDITION FLAGS                   FILE 20
                 ;                                                 FILE 20
0D79   0600             MVI  B,0       ;SET FOR NO I/O ERROR       FILE 20
0D7B   3A4FFF           LDA  ICERR     ;GET I/O ERROR FLAG         FILE 20
0D7E   FE46             CPI  FX        ;I/O ERROR OCCURRED?        FILE 20
0D80   C2850D           JNZ  SA010     ;NO - GET OTHER ERROR FLAGS FILE 20
0D83   0620             MVI  B,IERRB   ;YES - SET I/O ERROR BIT    FILE 20
0D85             SA010  EQU  $                                     FILE 20
0D85   47               MOV B,A        ;SAVE I/O ERROR BIT         FILE 20
0D86   3AF7FF           LDA  ERFLG     ;GET THE ERROR FLAGS        FILE 20
0D89   B0               ORA B          ;MERGE WITH EXISTING BITS   FILE 20
```

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                                                                             FILE 20
8080 MACRO ASSEMBLER, VER 2.4          ERRORS = 0 PAGE 69                    FILE 20
                                                                             FILE 20
                                                                             FILE 20
                                                                             FILE 20
 0D8A    CDD30B         CALL PROUT      ;TRANSMIT ERROR STATUS               FILE 20
                 ;                                                           FILE 20
                 ;  OUTPUT DEVICE TRANSFER PENDING FLAGS                     FILE 20
                 ;                                                           FILE 20
 0D8D    7C             MOV  A,H        ;GET TERMINAL MODE 1 FLAGS           FILE 20
 0D8E    07             RLC             ;PUT I/O DONE FLAG IN C-FLAG         FILE 20
 0D8F    7D             MOV  A,L        ;GET TERMNAL MODE 2 FLAGS            FILE 20
 0D90    17             RAL               ;ADD IN I/O DONE FLAG              FILE 20
 0D91    47             MOV  B,A        ;SAVE TEMPORARY RESULTS              FILE 20
 0D92    7C             MOV  A,H        ;RECALL TERMINAL MODE 1 FLAG         FILE 20
 0D93    0F             RRC             ;PUT DEVICE STATUS INTO              FILE 20
 0D94    0F             RRC               ;C-FLAG                            FILE 20
 0D95    0F             RRC                                                  FILE 20
 0D96    0F             RRC                                                  FILE 20
 0D97    78             MOV  A,B          ;RECALL ACCUMULATED BITS           FILE 20
 0D98    17             RAL               ;ADD IN DEVICE STATUS              FILE 20
 0D99    C3D30B         JMP  PROUT      ;SEND DEVICE XFR PENDING BIT         FILE 20
                 ;                                                           FILE 20
                 ;*****************************************                  FILE 20
                 ; STCHR1 - SET INITIAL DISPLAY CHARACTER IN *               FILE 20
                 ;   NEW DISPLAY BLOCK                        *              FILE 20
                 ;*****************************************                  FILE 20
                 ;                                                           FILE 20
                 ;  ENTRY:  H,L = ADDRESS OF FIRST DISPLAY                   FILE 20
                 ;                IN BLOCK                                   FILE 20
                 ;                                                           FILE 20
                 ;  EXIT :  A = 0                                            FILE 20
                 ;          H,L UNCHANGED                                    FILE 20
                 ;                                                           FILE 20
 0D9C            SCHR1  EQU  $                                               FILE 20
 0D9C    3AF4FF         LDA  MFLG1      ;GET SOFT MODE FLAGS                 FILE 20
 0D9F    E680           ANI  FORGN      ;FOREIGN MODE ENABLED?               FILE 20
 0DA1    3ECC           MVI  A,EOL        ;(SET TO STORE EOL)                FILE 20
 0DA3    CAAE0D         JZ   SC010      ;NO - STORE EOL ONLY                 FILE 20
 0DA6    2B             DCX  H          ;YES - STORE EOL AND DISPLAY         FILE 20
 0DA7    77             MOV  M,A          ;CONTROL BYTE TO CAUSE             FILE 20
 0DA8    3A2970         LDA  FSALT      ;FOREIGN CHARACTER SET TO            FILE 20
 0DAB    F680           ORI  200Q       ;BE DISPLAYED                        FILE 20
 0DAD    23             INX  H                                               FILE 20
 0DAE            SC010  EQU  $                                               FILE 20
 0DAE    77             MOV  M,A        ;STORE FIRST DISPLAY CHAR            FILE 20
 0DAF    AF             XRA  A          ;CLEAR A-REGISTER                    FILE 20
 0DB0    C9             RET             ;RETURN                              FILE 20
                 ;                                                           FILE 20
                 ;**********************************                         FILE 20
                 ; TEST - PERFORM TERMINAL SELF TEST *                       FILE 20
                 ;**********************************                         FILE 20
 0DB1            TEST   EQU  $                                               FILE 20
 0DB1    CDC20F         CALL CEDIT      ;EDIT MODE ENABLED?                  FILE 20
 0DB4    C0             RNZ             ;YES - DON'T DO SELF-TEST            FILE 20
 0DB5    3E08           MVI  A,CIOKY                                         FILE 20
 0DB7    CD0870         CALL ZBCTL      ;I/O CONTROL KEY DOWN ALSO?          FILE 20
 0DBA    211128         LXI  H,TTCTU      ;(SET FOR CTU SELF-TEST)           FILE 20
 0DBD    C27615         JNZ  IRMGO      ;YES - DO CTU SELF-TEST              FILE 20
                 ;                       NO - DO TERMINAL SELF-TEST          FILE 20
                 ;                                                           FILE 20
                 ;  PERFORM TERMINAL SELF-TEST                               FILE 20
                 ;                                                           FILE 20
 0DC0            TMTST  EQU  $                                               FILE 20
 0DC0    3AFAFF         LDA  KJMP2      ;GET KEYBOARD JUMPERS 2              FILE 20
```

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                                                                  FILE 20
                                                                  FILE 20
                                                                  FILE 20
                                                                  FILE 20
                                                                  FILE 20
0DC3   E604          ANI  NTEST      ;SELF-TEST INHIBITED         FILE 20
0DC5   21890E        LXI  H,NTSMS      ;(SET MESSAGE ADDRESS)     FILE 20
0DC8   C25919        JNZ  DPMS1      ;YES - DISPLAY MSG AND EXIT  FILE 20
0DCB   3A6EFF        LDA  DFLGS      ;GET DATA TRANSFER FLAGS     FILE 20
0DCE   E680          ANI  XF2DS      ;DATA FROM I/O BUFFER        FILE 20
0DD0   C25919        JNZ  DPMS1      ;YES - DON'T DO SELF-TEST    FILE 20
0DD3   CD5115        CALL IBSYC      ;WAIT UNTIL CTU'S IDLE       FILE 20
0DD6   F3            DI              ;DISABLE INTERRUPTS          FILE 20
0DD7   3E05          MVI  A,SRTST    ;SET KEYBOARD FOR SELF-TEST  FILE 20
0DD9   CD0870        CALL ZBCTL        ;START-UP                  FILE 20
              ;                                                   FILE 20
              ;*********************                              FILE 20
              ; ROM TEST            *                             FILE 20
              ;                     *                             FILE 20
              ; CALCULATE CHECKSUM  *                             FILE 20
              ; FOR EACH 2K ROM     *                             FILE 20
              ;*********************                              FILE 20
0DDC   C3DF0D        JMP  TT199      ;MODIF.-LXI H,-NUM2K START ADRESS FILE 20
              ;***********************                            FILE 20
              ; DISPLAY TEST PATTERN *                            FILE 20
              ;***********************                            FILE 20
0DDF          TT199  EQU  $                                       FILE 20
0DDF   CD1470        CALL ZBELL      ;SOUND THE BELL              FILE 20
0DE2   3EC0          MVI  A,300Q     ;SET INITIAL CHARACTER SET   FILE 20
0DE4          TT200  EQU  $                                       FILE 20
0DE4   D610          SUI  20Q        ;SET TO NEXT CHARACTER SET   FILE 20
0DE6   F5            PUSH PSW        ;SAVE CURRENT ENHANCEMENT    FILE 20
0DE7   AF            XRA  A          ;SET CHARACTER TO NULL       FILE 20
0DE8   3268FF        STA  TCHAR                                   FILE 20
0DEB          TT220  EQU  $                                       FILE 20
0DEB   CD6A1E        CALL CRRET   ;DO CR                          FILE 20
0DEE   CDC10A        CALL CNDLF   ;DO LF IF WRAPAROUND DISABLED   FILE 20
0DF1   F1            POP  PSW       ;RECALL CURRENT ENHANCEMENT   FILE 20
0DF2   F5            PUSH PSW         ;AND SAVE IT AGAIN          FILE 20
0DF3   CD1A0D        CALL SHFT2      ;PUT ENHANCEMENT ON DISPLAY  FILE 20
0DF6          TT240  EQU  $                                       FILE 20
0DF6   3A68FF        LDA  TCHAR      ;GET CURRENT ENHANCEMENT COD FILE 20
0DF9   3289FF        STA  DCHAR   ;STORE CHAR FOR DISPLAY         FILE 20
0DFC   E607          ANI 7        ;EVERY 8 CHARS INSERT 2 BLNKS   FILE 20
0DFE   FE04          CPI  4          ;TIME TO ADD TWO BLANKS?     FILE 20
0E00   CC781C        CZ   CRAD2      ;YES - ADVANCE CURSOR TWICE  FILE 20
0E03   CD5720        CALL DPCHR      ;DISPLAY THE CHARACTER       FILE 20
0E06   2168FF        LXI  H,TCHAR                                 FILE 20
0E09   34            INR  M          ;INCREMENT DISPLAY CHARACTER FILE 20
0E0A   7E            MOV  A,M        ;GET NEW CHARACTER           FILE 20
0E0B   FE40          CPI 64                                       FILE 20
0E0D   CAEB0D        JZ   TT220      ;IF 64 THEN NEW LINE         FILE 20
0E10   B7            ORA A        ;ALL CHARACTERS DONE?           FILE 20
0E11   F2F60D        JP   TT240   ;NO - CONTINUE                  FILE 20
0E14   CD0D1D        CALL CRLF       ;YES - DOUBLE SPACE BETWEEN  FILE 20
0E17   F1            POP  PSW          ;CHARACTER SETS            FILE 20
0E18   FE80          CPI  200Q       ;ALL CHARACTER SETS DONE?    FILE 20
0E1A   C2E40D        JNZ  TT200      ;NO - CONTINUE DISPLAY       FILE 20
              ;                                                   FILE 20
              ;*****************************                      FILE 20
              ; DISPLAY ENHANCEMENT PATTERN *                     FILE 20
              ;*****************************                      FILE 20
0E1D   F5            PUSH PSW        ;SAVE ENHANCEMENT CODE       FILE 20
0E1E   CDC10A        CALL CNDLF      ;DO LF IF WRAPAROUND DISABLE FILE 20
0E21          TT420  EQU  $                                       FILE 20
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0E21   F1               POP  PSW      ;RECALL CURRENT ENHANCEMENT
0E22   F5               PUSH PSW      ;SAVE ENHANCEMENT AGAIN
0E23   D640             SUI  100Q     ;COMPUTE ASCII DISPLAY CODE
0E25   CD5120           CALL DPTST    ;DISPLAY THE CHARACTER
0E28   F1               POP  PSW      ;RECALL CURRENT ENHANCEMENT
0E29   3C               INR  A        ;INCREMENT ENHANCEMENT
0E2A   FE90             CPI  220Q     ;LAST ENHANCEMENT DONE?
0E2C   CA360E           JZ   TT440    ;YES - DISPLAY STATUS
0E2F   F5               PUSH PSW      ;NO - SAVE ENHANCEMENT CODE
0E30   CD901E           CALL DSPCO    ;ADD ENHANCEMENT TO DISPLAY
0E33   C3210E           JMP  TT420    ;DISPLAY ASCII DISPLAY CODE
                 ;
0E36             TT440  EQU  $
0E36   AF               XRA  A
0E37   CD901E           CALL DSPCO    ;RETURN TO NORMAL VIDEO
0E3A   CD781C           CALL CRAD2    ;ADVANCE CURSOR TWICE
                 ;**************************
                 ; DISPLAY TERMINAL STATUS *
                 ;**************************
0E3D   21F7FF           LXI  H,ERFLG  ;SET ERROR FLAG TO
0E40   7E               MOV  A,M        ;SELF-TEST SUCCESSFUL
0E41   F602             ORI  TSTOK
0E43   77               MOV  M,A
0E44   215120           LXI  H,DPTST  ;SET H,L TO OUTPUT ROUTINE
0E47   CD480D           CALL SAPAR    ;DISPLAY TERMINAL STATUS
0E4A   CD7B1C           CALL CRADV    ;PUT SPACE BETWEEN STATUS
0E4D   CD7823           CALL SA2G2
0E50   CD0D1D           CALL CRLF
0E53   CD0D1D           CALL CRLF
                 ;**********************
                 ; TERMINATE SELF-TEST *
                 ;**********************
0E56   3E06             MVI  A,EDTST  ;RESTORE KEYBOARD LED'S
0E58   CD0870           CALL ZBCTL
0E5B   FB               EI            ;RE-ENABLE INTERRUPTS
0E5C   C3991C           JMP  CADV1    ;RESET CURSOR ADVANCE FLAG
                 ;
                 ;******************
                 ; MESSAGE STORAGE *
                 ;******************
0E5F             BFMSG  EQU  $
0E5F   42554646         DB   'BUFFER OVERFLOW',EOP
0E63   4552204F
0E67   56455246
0E6B   4C4F57CE
                 ;
0E6F             RMERR  EQU  $
0E6F   524F4D00         DB   'ROM',0
                 ;
0E73             RAERR  EQU  $
0E73   52414D00         DB   'RAM',0
                 ;
0E77             IERMS  EQU  $
0E77   492F4F           DB   'I/O'
                 ;
0E7A             RXERR  EQU  $
0E7A   20455252         DB   ' ERROR ',0
0E7E   4F522000
                 ;
0E82             LRMSG  EQU  $
```

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                                                                   FILE 20
                                                                   FILE 20
                                                                   FILE 20
                                                                   FILE 20
                                                                   FILE 20
0E82    4C4F4144            DB    'LOADER'                         FILE 20
0E86    4552                                                       FILE 20
0E88                EREOP   EQU   $                                FILE 20
0E88    CE                  DB    EOP                              FILE 20
                    ;                                              FILE 20
0E89                NTSMS   EQU   $                                FILE 20
0E89    4E4F2054            DB    'NO TEST',EOP                    FILE 20
0E8D    455354CE                                                   FILE 20
                    ;                                              FILE 20
0E91                NDRVR   EQU   $                                FILE 20
0E91    4E4F2044            DB    'NO DEVICE DRIVER',EOP           FILE 20
0E95    45564943                                                   FILE 20
0E99    45204452                                                   FILE 20
0E9D    49564552                                                   FILE 20
0EA1    CE                                                         FILE 20
                    ;                                              FILE 20
0EA2                YMS03   EQU   $                                FILE 20
0EA2    42494C44            DB    'BILDSCHIRMSPEICHER '            FILE 20
0EA6    53434849                                                   FILE 20
0EAA    524D5350                                                   FILE 20
0EAE    45494348                                                   FILE 20
0EB2    455220                                                     FILE 20
0EB5    824E4F43            DB    INVRS,'NOCH 4 ZEILEN '           FILE 20
0EB9    48203420                                                   FILE 20
0EBD    5A45494C                                                   FILE 20
0EC1    454E20                                                     FILE 20
0EC4    46524549            DB    'FREI ',200Q,EOP                 FILE 20
0EC8    2080CE                                                     FILE 20
                    ;                                              FILE 20
0ECB                YMS01   EQU   $                                FILE 20
0ECB    8242494C            DB    INVRS,'BILDSCHIRMSPEICHER'       FILE 20
0ECF    44534348                                                   FILE 20
0ED3    49524D53                                                   FILE 20
0ED7    50454943                                                   FILE 20
0EDB    484552                                                     FILE 20
0EDE    20564F4C            DB    ' VOLL " DATENSICHERUNG "'       FILE 20
0EE2    4C202220                                                   FILE 20
0EE6    44415445                                                   FILE 20
0EEA    4E534943                                                   FILE 20
0EEE    48455255                                                   FILE 20
0EF2    4E472022                                                   FILE 20
0EF6    80CE                DB    200Q,EOP                         FILE 20
                    ;                                              FILE 20
                    ;                                              FILE 20
                    ;***********************************           FILE 20
                    ; TOPUPD - UPDATE TOP LINE POINTERS *          FILE 20
                    ;***********************************           FILE 20
0EF8                TPUPD   EQU $                                  FILE 20
0EF8    23                  INX  H          ;PUT THE MSB INTO THE  FILE 20
0EF9    46                  MOV  B,M          ;B-REGISTER          FILE 20
0EFA    4F                  MOV  C,A        ;SAVE TOP LINE'S LSB IN C-RE  FILE 20
0EFB    21A3FF              LXI  H,TLINO    ;UPDATE TOP LINE NUMBER       FILE 20
0EFE    7A                  MOV A,D                                FILE 20
0EFF    B7                  ORA A          ;IS TLINO TO BE RESET?  FILE 20
0F00    CA040F              JZ   TP100     ;YES                    FILE 20
0F03    86                  ADD M          ;NO - INCREMENT OR DECREMENT  FILE 20
0F04                TP100   EQU $                                  FILE 20
0F04    77                  MOV M,A        ;STORE UPDATED TLINO    FILE 20
0F05                TPUP1   EQU  $                                 FILE 20
0F05    60                  MOV  H,B         ;SET NEW TOP LINE POINTER  FILE 20
```

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                                                                FILE 20
                                                                FILE 20
                                                                FILE 20
                                                                FILE 20
                                                                FILE 20
 0F06   69              MOV  L,C                                FILE 20
 0F07   22CBFF          SHLD TPLIN                              FILE 20
 0F0A   3AF8FF          LDA  CFLGS      ;GET COMMON FLAGS       FILE 20
 0F0D   E608            ANI  DFSKY      ;SOFT KEY DEFINE MODE?  FILE 20
 0F0F   C0              RNZ             ;YES - DON'T CHANGE SCREEN FILE 20
 0F10   21FFFF          LXI  H,DSPST+1   ;GET DISPLAY START ADDRESS FILE 20
 0F13   0B              DCX  B          ;SET TO FIRST CHAR ADDRESS FILE 20
                ;*************************************     FILE 20
                ; DISLNK - STORE LINK IN DISPLAY AREA *     FILE 20
                ;*************************************     FILE 20
                ;                                           FILE 20
                ;  ENTRY:  B,C = LINK TO BE STORED          FILE 20
                ;          H,L = STORE ADDRESS FOR MSB PART FILE 20
                ;                                           FILE 20
                ;  EXIT :  H,L = LSB OF STORE ADDRESS       FILE 20
                ;          A DESTROYED                      FILE 20
                ;          INTERRUPTS ENABLED               FILE 20
                ;                                           FILE 20
 0F14           DSLNK   EQU  $                              FILE 20
 0F14   3E60            MVI  A,DAOFF    ;SET TO TURN OFF THE DMA FILE 20
 0F16   F3              DI              ;DISABLE INTERRUPTS  FILE 20
 0F17   322780          STA  ICRRW      ;TURN OFF DMA        FILE 20
 0F1A   70              MOV  M,B        ;STORE LINK'S MSB    FILE 20
 0F1B   2B              DCX  H                               FILE 20
 0F1C   71              MOV  M,C        ;STORE LINK'S MSB    FILE 20
 0F1D           DSLN1   EQU  $          ;SET CURSOR ROW POSITION FILE 20
 0F1D   3AC0FF          LDA  CRROW      ;TURN DMA BACK ON WITH FILE 20
 0F20           DSLN2   EQU  $                               FILE 20
 0F20   322780          STA  ICRRW        ;CURRENT CURSOR ROW ADDRES FILE 20
 0F23           DSLN3   EQU  $                               FILE 20
 0F23   FB              EI              ;RE-ENABLE INTERRUPTS FILE 20
 0F24           DSLN4   EQU  $          ;RE-ENABLE RESET KEY FILE 20
 0F24   3E02            MVI  A,RSTON                         FILE 20
 0F26   328380          STA  IKBCO                           FILE 20
 0F29   C9              RET             ;RETURN              FILE 20
                ;                                            FILE 20
                ;******************************             FILE 20
                ; TYPSET - SET TYPE DEFINITION *             FILE 20
                ;******************************             FILE 20
 0F2A           TPSET   EQU  $                               FILE 20
 0F2A   CD7317          CALL CKFMS      ;FORMAT/SOFT KEY DEFINE MODE FILE 20
 0F2D   C0              RNZ             ;YES - DO SET TYPE   FILE 20
 0F2E   3A89FF          LDA  DCHAR      ;NO - COMPUTE TYPE DEFINITIO FILE 20
 0F31   C68F            ADI  ALPHA-ZERO-6  ;CHARACTER        FILE 20
 0F33   C3921E          JMP  DSPC1      ;ADD CHARACTER TO DISPLAY FILE 20
                ;***********************************          FILE 20
                ; SFKCHK - SOFT KEY ATTRIBUTE CHECK *          FILE 20
                ;***********************************          FILE 20
 0F36           SKCHK   EQU  $                               FILE 20
 0F36   E6DF            ANI  377Q-40Q   ;FORCE INPUT TO UPPER CASE FILE 20
 0F38   2AC3FF          LHLD CRADR      ;RECALL CHARACTER ADDRESS FILE 20
 0F3B   77              MOV  M,A        ;STORE UPPER CASE VALUE FILE 20
 0F3C   FE4E            CPI  NX         ;NORMAL ATTRIBUTE SET? FILE 20
 0F3E   C8              RZ              ;YES - RETURN SUCCESSFUL FILE 20
 0F3F   FE4C            CPI  LX         ;LOCAL ATTRIBUTE SET? FILE 20
 0F41   C8              RZ              ;YES - RETURN SUCCESSFUL FILE 20
 0F42   FE54            CPI  TX         ;TRANSMIT ONLY SET?  FILE 20
 0F44   C8              RZ              ;YES - RETURN SUCCESSFUL FILE 20
 0F45   70              MOV  M,B        ;NO - RESTORE ORIGINAL FILE 20
 0F46   C9              RET               ;ATTRIBUTE AND RETURN NZ FILE 20
```

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                                                                    FILE 20
8080 MACRO ASSEMBLER, VER 2.4        ERRORS = 0 PAGE 74             FILE 20
                                                                    FILE 20
                                                                    FILE 20
                                                                    FILE 20
                    ;                                               FILE 20
                    ;                                               FILE 20
                    ;                                               FILE 20
                    ; * * * * * * * * * * * * * * * * * * * * * * * FILE 20
                    ;                                               FILE 20
                    ;  XMS2DS - TRANSFER MESSAGE TO NORMAL DISPLAY  FILE 20
                    ;                                               FILE 20
                    ;      ENTRY:  H,L = POINTER TO MESSAGE         FILE 20
                    ;                                               FILE 20
                    ;      EXIT :  A-L DESTROYED                    FILE 20
                    ;              Z - TERMINATED BY A NULL BYTE    FILE 20
                    ;              NZ - TERMINATED BY AN EOP        FILE 20
                    ;                                               FILE 20
0F47                XD000  EQU  $                                   FILE 20
0F47     CD5120            CALL DPTST     ;DISPLAY ASCII CHARACTER AND FILE 20
                    ;                       ADVANCE CURSOR          FILE 20
0F4A                XD010  EQU  $                                   FILE 20
0F4A     E1                POP  H         ;RESTORE H AND L          FILE 20
0F4B     23                INX  H         ;MOVE TO NEXT BYTE        FILE 20
                    ;                     PROCESS THE NEXT BYTE     FILE 20
0F4C                XS2DS  EQU  $                                   FILE 20
0F4C     7E                MOV  A,M       ;SET THE SOURCE BYTE      FILE 20
0F4D     B7                ORA  A         ;IS IT A NULL BYTE?       FILE 20
0F4E     C8                RZ             ;YES - RETURN (Z - TRUE)  FILE 20
0F4F     FECE              CPI  EOP       ;IS IT END OF PAGE FLAG?  FILE 20
0F51     CA6C0F            JZ   XD030     ;YES - EXIT               FILE 20
0F54     E5                PUSH H         ;NO - SAVE H,L            FILE 20
0F55     FECC              CPI  EOL       ;IS IT AN END OF LINE?    FILE 20
0F57     CA660F            JZ   XD020     ;YES - START A NEW LINE   FILE 20
0F5A     B7                ORA  A         ;IS CHARACTER ASCII?      FILE 20
0F5B     F2470F            JP   XD000     ;YES - DISPLAY IT         FILE 20
0F5E     0600              MVI  B,0       ;NO - FORCE ENHANCEMENT CODE FILE 20
0F60     CD941E            CALL DSPC2       ;TO BE STORED AS IS     FILE 20
0F63     C34A0F            JMP  XD010     ;GO TO NEXT BYTE          FILE 20
                    ;                                               FILE 20
                    ;                                               FILE 20
                    ;  EOL CODE - TERMINATE THE LINE                FILE 20
                    ;                                               FILE 20
0F66                XD020  EQU  $                                   FILE 20
0F66     CD0D1D            CALL CRLF      ;PERFORM RETURN AND LINE FEE FILE 20
0F69     C34A0F            JMP  XD010     ;DO NEXT BYTE             FILE 20
                    ;                                               FILE 20
                    ;  EOP CODE - TERMINATE LINE AND EXIT           FILE 20
                    ;                                               FILE 20
0F6C                XD030  EQU  $                                   FILE 20
0F6C     CD0D1D            CALL CRLF      ;PUT CURSOR IN NEXT LINE  FILE 20
0F6F     B4                ORA  H         ;SET Z FALSE              FILE 20
0F70     C9                RET            ;RETURN TEMINATED BY EOP  FILE 20
                    ;                                               FILE 20
                    ;******************************************     FILE 20
                    ; CARRET - PERFORM DISPLAY FUNCTIONS RETURN *   FILE 20
                    ;******************************************     FILE 20
0F71                CARET  EQU  $                                   FILE 20
0F71     CD8917            CALL CKSFK     ;SOFT KEY DEFINE MODE?    FILE 20
0F74     CA800F            JZ   CR010     ;NO - DO NORMAL PROCESSING FILE 20
0F77     CD1B12            CALL DXB2D     ;DATA FROM KEYBOARD?      FILE 20
0F7A     CA5720            JZ   DPCHR     ;YES - DISPLAY RETURN CODE FILE 20
0F7D     CDC10C            CALL SKYOF     ;NO - RESTORE NORMAL DISPLAY FILE 20
0F80                CR010  EQU  $                                   FILE 20
0F80     210D1D            LXI  H,CRLF    ;SET NORMAL ROUTINE EXIT  FILE 20
```

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                                                                                FILE 20
8080 MACRO ASSEMBLER, VER 2.4          ERRORS = 0 PAGE 75                       FILE 20
                                                                                FILE 20
                                                                                FILE 20
                                                                                FILE 20
 0F83   C35A20          JMP   DPCHO     ;DISPLAY THE CHARACTER                  FILE 20
                 ;                                                              FILE 20
                 ;*******************************************                    FILE 20
                 ; CHKLIM - CHECK PARAMETER BOUNDARY CONDITIONS *               FILE 20
                 ;*******************************************                    FILE 20
                 ;                                                              FILE 20
                 ;  ENTRY:  B = CURRENT VALUE                                    FILE 20
                 ;          C = MAXIMUM ALLOWABLE VALUE                         FILE 20
                 ;          D,E = ADDRESS OF PARAMETER TO BE SET                FILE 20
                 ;          IODATA = PARAMETER VALUE (2 BYTES)                  FILE 20
                 ;          IOPSGN = -1, NEGATIVE ADJUSTMENT                    FILE 20
                 ;                 =  0, ABSOLUTE VALUE                         FILE 20
                 ;                 = +1, POSITIVE ADJUSTMENT                    FILE 20
                 ;                                                              FILE 20
                 ;  EXIT :  NEW VALUE IN WORD ADDRESSED BY D,E                  FILE 20
                 ;          A,C,H,L DESTROYED                                   FILE 20
                 ;                                                              FILE 20
                 ;  THIS ROUTINE SET THE NEW VALUE BY EITHER                    FILE 20
                 ;  OR ABSOLUTE ADJUST WITHING THE LIMITS OF                    FILE 20
                 ;  ZERO AND THE MAXIMUM ALLOWABLE AS SPECIFIED                 FILE 20
                 ;  THE C-REGISTER ON ENTRY                                     FILE 20
                 ;                                                              FILE 20
                 ;  THE LARGEST MAXIMUM VALUE IS 255                            FILE 20
                 ;                                                              FILE 20
 0F86            CKLIO  EQU  $                                                  FILE 20
 0F86   3ADDFF          LDA  ICSGN      ;SET PARAMETER SIGN TO                  FILE 20
 0F89   32DCFF          STA  IPSGN        ;INPUT SIGN                           FILE 20
 0F8C            CKLIM  EQU  $                                                  FILE 20
 0F8C   3ADFFF          LDA  IDATA+1    ;GET MSB OF INPUT VALUE                 FILE 20
 0F8F   B7              ORA  A          ;MAXIMUM EXCEEDED?                      FILE 20
 0F90   3ADCFF          LDA  IPSGN        ;(GET PARAMETER SIGN)                 FILE 20
 0F93   CA9D0F          JZ   CK050      ;NO - CONTINUE EVALUATION               FILE 20
 0F96   87              ADD  A          ;NEGATIVE ADJUSTMENT?                   FILE 20
 0F97   F2AC0F          JP   CK070      ;NO - SET TO MAXIMUM VALUE              FILE 20
                 ;                                                              FILE 20
                 ;  DEFAULT TO MINIMUM VALUE (0)                                FILE 20
                 ;                                                              FILE 20
 0F9A            CK010  EQU $          ;SET TO ZERO                             FILE 20
 0F9A   AF              XRA A                                                   FILE 20
 0F9B   12              STAX D          ;STORE NEW VALUE                        FILE 20
 0F9C   C9              RET             ;RETURN                                 FILE 20
                 ;                                                              FILE 20
                 ;                                                              FILE 20
                 ;  PARAMETER < 256, EVALUATE FOR RELATIVE AMOUNT               FILE 20
                 ;                                                              FILE 20
 0F9D            CK050  EQU $                                                   FILE 20
 0F9D   21DEFF          LXI  H,IDATA    ;SET H,L TO GET INPUT VALUE             FILE 20
 0FA0   87              ADD  A          ;RELATIVE POSITIONING?                  FILE 20
 0FA1   78              MOV A,B         ;(LOAD CURRENT VALUE)                   FILE 20
 0FA2   FAB60F          JM  CK160       ;MINUS - SUBTRACT INPUT                 FILE 20
 0FA5   C2AF0F          JNZ CK150       ;PLUS - ADD INPUT                       FILE 20
 0FA8   7E              MOV A,M         ;NONE - ABSOLUTE ASSIGNMENT             FILE 20
                 ;                                                              FILE 20
                 ;  CHECK UPPER LIMIT + 1                                       FILE 20
                 ;                                                              FILE 20
 0FA9            CK060  EQU  $                                                  FILE 20
 0FA9   12              STAX D          ;STORE ASSIGNED VALUE                   FILE 20
 0FAA   B9              CMP  C          ;MAXIMUM EXCEEDED?                      FILE 20
 0FAB   D8              RC              ;NO - RETURN                            FILE 20
 0FAC            CK070  EQU  $          ;YES - USE MAXIMUM VALUE                FILE 20
```

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0FAC    79              MOV  A,C                                        FILE 20
                ;************************                               FILE 20
                ; STORE PARAMETER VALUE *                               FILE 20
                ;************************                               FILE 20
0FAD            CK100  EQU  $                                           FILE 20
0FAD    12              STAX D          ;STORE PARAMETER VALUE          FILE 20
0FAE    C9              RET             ;RETURN                         FILE 20
                ;                                                       FILE 20
                ;  POSITIVE ADJUSTMENT - ADD INPUT                      FILE 20
                ;                                                       FILE 20
0FAF            CK150  EQU $                                            FILE 20
0FAF    86              ADD M           ;OVERFLOW?                      FILE 20
0FB0    D2A90F          JNC CK060       ;NO - USE SPECIFIED VALUE       FILE 20
0FB3    C3AC0F          JMP CK070       ;YES - USE MAXIMUM VALUE        FILE 20
                ;                                                       FILE 20
                ;  NEGATIVE ADJUSTMENT - SUBTRACT INPUT                 FILE 20
                ;                                                       FILE 20
0FB6            CK160  EQU $                                            FILE 20
0FB6    96              SUB M           ;UNDERFLOW?                     FILE 20
0FB7    DA9A0F          JC   CK010       ;YES - USE ZERO                FILE 20
0FBA    12              STAX D          ;NO - USE COMPUTED VALUE        FILE 20
0FBB    C9              RET             ;RETURN                         FILE 20
                ;                                                       FILE 20
                ;*********************************************          FILE 20
                ; CKDSPF - CHECK FOR DISPLAY FUNCTIONS ENABLED *        FILE 20
                ;*********************************************          FILE 20
0FBC            CDSPF  EQU  $                                           FILE 20
0FBC    3AF4FF          LDA  MFLG1      ;GET SOFT MODE FLAGS            FILE 20
0FBF    E601            ANI  DPFNC      ;MASK FOR DISPLAY FUNCTIONS     FILE 20
0FC1    C9              RET               ;FLAG AND RETURN              FILE 20
                ;************************************                   FILE 20
                ; CKEDIT - CHECK FOR EDIT MODE ENABLED *                FILE 20
                ;************************************                   FILE 20
0FC2            CEDIT  EQU  $                                           FILE 20
0FC2    3AF4FF          LDA  MFLG1      ;GET SOFT MODE FLAGS            FILE 20
0FC5    E610            ANI  EDIT       ;MASK FOR EDIT FLAG AND         FILE 20
0FC7    C9              RET               ;RETURN                       FILE 20
                ;***********************************                    FILE 20
                ; GTMODE - DETERMINE MODE OF TERMINAL *                 FILE 20
                ; Z = TRUE IF CHARACTER MODE          *                 FILE 20
                ; Z = FALSE IF PAGE MODE              *                 FILE 20
                ;***********************************                    FILE 20
0FC8            GMOD1  EQU  $                                           FILE 20
0FC8    3A64FF          LDA  IFLG2      ;GET I/O FLAGS                  FILE 20
0FCB    E620            ANI  XS2BF      ;DISPLAY TO BUFFER TRANSFER?    FILE 20
0FCD    C0              RNZ             ;YES - RETURN PAGE MODE         FILE 20
0FCE            GMODE  EQU  $           ;NO - CHECK REAL PAGE MODE      FILE 20
0FCE    3AF3FF          LDA  MFLG2      ;GET TERMINAL MODE FLAGS 2      FILE 20
0FD1    E602            ANI  BKMDE      ;BLOCK MODE ENABLED?            FILE 20
0FD3    C8              RZ             ;NO - RETURN (Z=TRUE)            FILE 20
                ;                                                       FILE 20
                ;  CKLNMD - CHECK LINE MODE                             FILE 20
                ;                                                       FILE 20
                ;       EXIT :  Z = TRUE, LINE MODE                     FILE 20
                ;                 = FALSE, PAGE MODE                    FILE 20
                ;               A,L DESTROYED                           FILE 20
                ;                                                       FILE 20
0FD4            CLNMD  EQU $                                            FILE 20
0FD4    3AFBFF          LDA  KJMPR      ;GET THE STRAP SETTINGS         FILE 20
0FD7    E608            ANI  PGSTR      ;SET Z-FLAG                     FILE 20
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0FD9    C9              RET             ;RETURN                              FILE 20
                ;                                                            FILE 20
                ;*****************************************                   FILE 20
                ; CKPROT - CHECK PROTECT STATUS OF CURRENT *                 FILE 20
                ;   CURSOR LOCATION                         *                FILE 20
                ;*****************************************                   FILE 20
0FDA                    CPROT   EQU  $                                       FILE 20
0FDA    3AC2FF          LDA  POFLD      ;GET PROTECT FLAG                    FILE 20
0FDD    3C              INR  A          ;SET Z-FLAG (-1 => PROTECTED         FILE 20
0FDE    C9              RET             ;RETURN                              FILE 20
                ;****************************************                    FILE 20
                ; CKRMTE - CHECK FOR REMOTE MODE ENABLED *                   FILE 20
                ;****************************************                    FILE 20
0FDF                    CRMTE   EQU  $                                       FILE 20
0FDF    3AF8FF          LDA  CFLGS      ;GET COMMON FLAGS                    FILE 20
0FE2    E610            ANI  RMSET      ;MASK FOR REMOTE FLAG                FILE 20
0FE4    C9              RET             ;RET (NZ => YES; Z => NO)            FILE 20
                ;                                                            FILE 20
                ;********************************************                FILE 20
                ; CLBLXF - CLEAR BLOCK TRANSFER PENDING FLAG *               FILE 20
                ;********************************************                FILE 20
                ;                                                            FILE 20
                ;   ENTRY:  B = 377B-(FLAG TO CLEAR FROM MFLGS)              FILE 20
                ;           C = 377B-(FLAG TO CLEAR FROM MFLGS2)             FILE 20
                ;                                                            FILE 20
                ;   EXIT :  H = BASEH                                        FILE 20
                ;           A,B,L DESTROYED                                  FILE 20
                ;                                                            FILE 20
                ;   CLEARS THE SPECIFIED TRANSFER PENDING FLAG               FILE 20
                ;   FROM "MFLGS".  IF NO OTHER TRANSFER IS PENDING,          FILE 20
                ;   THEN THE KEYBOARD IS UNLOCKED.  OTHERWISE,               FILE 20
                ;   THE NEXT TRANSFER PENDING IS SET UP.                     FILE 20
                ;                                                            FILE 20
0FE5                    CBLXF   EQU  $                                       FILE 20
0FE5    2A6FFF          LHLD MLGS2      ;GET TRANSFER PENDING FLAGS          FILE 20
0FE8    78              MOV  A,B                                             FILE 20
0FE9    A4              ANA  H          ;CLEAR FLAG FROM "MFLGS"             FILE 20
0FEA    67              MOV  H,A                                             FILE 20
0FEB    79              MOV  A,C                                             FILE 20
0FEC    A5              ANA  L          ;CLEAR FLAG FROM "MFLGS2"            FILE 20
0FED    6F              MOV  L,A                                             FILE 20
0FEE    226FFF          SHLD MLGS2      ;STORE NEW FLAG VALUES               FILE 20
0FF1    E603            ANI  SINRY+SVREC                                     FILE 20
0FF3    B4              ORA  H          ;ANY MORE TRANSFER PENDING?          FILE 20
0FF4    010000          LXI  B,0          ;(SET FOR NULL FLAGS SET)          FILE 20
0FF7    C22616          JNZ  SLXF0      ;YES - SET UP NEXT BLOCK XFR         FILE 20
0FFA    CDD315          CALL KBEN       ;NO - RE-ENABLE KEYBOARD             FILE 20
                ;                                                            FILE 20
                ;   CLRXON - CLEAR BLOCK TRANSFER TRIGGER                    FILE 20
                ;                                                            FILE 20
0FFD                    CRXON   EQU  $                                       FILE 20
0FFD    3E00            MVI  A,CRTRG    ;CLEAR BLOCK TRANSFER TRIGGE         FILE 20
0FFF    CDB711          CALL DMCTL      ;PERFORM DATACOM CONTROL             FILE 20
1002    37              STC             ;SET C-FLAG TRUE AND                 FILE 20
1003    C9              RET               ;RETURN                            FILE 20
                ;                                                            FILE 20
                ;**********************************************              FILE 20
                ; CLEARS - CLEAR DISPLAY FROM CURSOR POSITION *              FILE 20
                ;**********************************************              FILE 20
1004                    CEARS   EQU  $          ;CLEAR UNPROTECTED FIELDS    FILE 20
```

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                                                                        FILE 20
                                                                        FILE 20
                                                                        FILE 20
                                                                        FILE 20
                                                                        FILE 20
1004   3EFE            MVI  A,377Q-SACOM   ;ONLY BY CLEARING DATA       FILE 20
1006   CDE015          CALL CRDFL      ;COMM INPUT FLAG                 FILE 20
1009   CD7317          CALL CKFMS     ;FORMAT/SOFT KEY DEFINE MODE      FILE 20
100C   C23E10          JNZ  CS100     ;YES - CLEAR FIELDS ONLY          FILE 20
100F   CDBE18          CALL CEARL     ;CLEAR LINE FROM CURSOR           FILE 20
1012   F8              RM             ;RETURN IF LINE NOT FOUND         FILE 20
1013   2AC9FF          LHLD LTLIN     ;GET CURRENT LINE ADDRESS         FILE 20
1016   7E              MOV  A,M       ;GET THE LSB VALUE                FILE 20
1017   B7              ORA  A         ;NEXT LINE EXIST (LSB # 0)?       FILE 20
1018   C8              RZ             ;NO - RETURN                      FILE 20
1019   E5              PUSH H         ;YES - ADD SUCCEEDING LINES       FILE 20
101A   3600            MVI  M,0         ;TO FREE BLOCKS LIST            FILE 20
101C   23              INX  H         ;SET NEXT LINE POINTER TO         FILE 20
101D   56              MOV  D,M         ;INDICATE NO NEXT LINE          FILE 20
101E   36CE            MVI  M,EOP                                       FILE 20
1020   5F              MOV  E,A       ;SET D,E TO TOP NEXT LINE         FILE 20
1021   2AACFF          LHLD FBLKS     ;GET CURRENT FREE BLOCKS HEA      FILE 20
1024   EB              XCHG           ;SET PREVIOUS LINE POINTER        FILE 20
1025   23              INX  H           ;IN FIRST SUCCEEDING LINE       FILE 20
1026   23              INX  H           ;TO CURRENT FREE BLOCKS         FILE 20
1027   23              INX  H           ;HEAD                           FILE 20
1028   73              MOV  M,E                                         FILE 20
1029   23              INX  H                                           FILE 20
102A   72              MOV  M,D                                         FILE 20
102B   2AA1FF          LHLD LLINE     ;SET FREE BLOCKS HEAD TO          FILE 20
102E   22ACFF          SHLD FBLKS       ;CURRENT LAST LINE              FILE 20
1031   E1              POP  H         ;SET LAST LINE ADDRESS TO         FILE 20
1032   22A1FF          SHLD LLINE       ;CURRENT LINE                   FILE 20
                ;******************                                     FILE 20
                ; MEMORY RELEASED  *                                    FILE 20
                ; CLEAR LOCK FLAGS *                                    FILE 20
                ;******************                                     FILE 20
1035            MLKOF  EQU $                                            FILE 20
1035   3AF4FF          LDA  MFLG1                                       FILE 20
1038   E604            ANI  MMLOK     ;MEMORY LOCK ENABLED?             FILE 20
103A   C8              RZ             ;NO - RETURN                      FILE 20
103B   C3310B          JMP  M0010     ;YES - SET LED ON WO/BLINKIN      FILE 20
                ;                                                       FILE 20
                ;****************************************               FILE 20
                ; FORMAT MODE CLEAR SCREEN FROM CURSOR *                FILE 20
                ;****************************************               FILE 20
103E            CS100  EQU  $                                           FILE 20
103E   F42E07          CP   RADR4     ;LOCATE CHAR IF FORMAT MODE       FILE 20
1041   F8              RM             ;RETURN IF NOT FOUND OR IN        FILE 20
                ;                       SOFT KEY DEFINE MODE            FILE 20
1042   C24910          JNZ  CS110     ;PAST EOL - START AT NEXT FL      FILE 20
1045   04              INR  B         ;CURSOR IN UNPROTECTED FIELD      FILE 20
1046   C25210          JNZ  CS130     ;YES - CLEAR REST OF FIELD        FILE 20
                ;*********************************                      FILE 20
                ; CURSOR IN PROTECTED FIELD      *                      FILE 20
                ; TAB TO NEXT UNPROTECTED FIELD *                       FILE 20
                ;*********************************                      FILE 20
1049            CS110  EQU $                                            FILE 20
1049   CD461A          CALL FLDSR     ;SEARCH TO NEXT FIELD             FILE 20
104C   C8              RZ             ;NO MORE FIELDS - RETURN          FILE 20
104D   1A              LDAX D         ;GET END PROTECT CHARACTER        FILE 20
104E            CS120  EQU  $                                           FILE 20
104E   32C5FF          STA  LTFMT     ;SET LAST FORMAT CODE             FILE 20
1051   1B              DCX  D         ;SKIP OVER "ENDPR" CHAR           FILE 20
                ;**************************                             FILE 20
```

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                                                                   FILE 20
                                                                   FILE 20
                                                                   FILE 20
                                                                   FILE 20
                                                                   FILE 20
                    ; CLEAR UNPROTECTED FIELD *                    FILE 20
                    ;*************************                     FILE 20
 1052               CS130  EQU $                                   FILE 20
 1052   CD1E19             CALL CER01     ;CLEAR FIELD             FILE 20
 1055   FECE               CPI EOP        ;TERMINATION AT END OF PAGE?  FILE 20
 1057   C8                 RZ             ;YES - RETURN            FILE 20
                    ;*************************************         FILE 20
                    ; SEARCH FOR NEXT UNPROTECTED FIELD *          FILE 20
                    ;*************************************         FILE 20
 1058   1B                 DCX  D         ;ADJUST ADDRESS TO NEXT CHAR  FILE 20
 1059               CS200  EQU  $                                  FILE 20
 1059   13                 INX  D         ;ADJUST ADDRESS TO PREV CHAR  FILE 20
 105A               CS210  EQU  $                                  FILE 20
 105A   CDBB0B             CALL NTCHR     ;GET NEXT CHARACTER      FILE 20
 105D   C25910             JNZ  CS200     ;SKIP OVER EOL LINK      FILE 20
 1060   FEC1               CPI  ENDPR     ;NEW FIELD?              FILE 20
 1062   CA4E10             JZ   CS120     ;YES - CLEAR IT          FILE 20
 1065   FECE               CPI  EOP       ;END OF DISPLAY?         FILE 20
 1067   C8                 RZ             ;YES - RETURN            FILE 20
 1068   FEC4               CPI  SPFLG     ;NON-DISPLAYING TERMINATOR?  FILE 20
 106A   CCB518             CZ   CRDL2     ;YES - DELETE IT         FILE 20
 106D   C35A10             JMP  CS210     ;CONTINUE SEARCH         FILE 20
                    ;                                              FILE 20
                    ;*************************                     FILE 20
                    ; CLRALL - CLEAR ALL TABS *                    FILE 20
                    ;*************************                     FILE 20
                    ;                                              FILE 20
                    ;  ENTRY:  H = BASEH                           FILE 20
                    ;                                              FILE 20
 1070               CRALL  EQU  $                                  FILE 20
 1070   2E78               MVI  L,HBTBL-BASE   ;SET ADDRESS AND NUMBER  FILE 20
 1072   1E0A               MVI  E,HBLEN      ;OF BYTES TO BE CLEARED  FILE 20
                    ;*************************************         FILE 20
                    ; CLRAL1 - SET A REGION OF RAM TO ZERO *       FILE 20
                    ;*************************************         FILE 20
                    ;                                              FILE 20
                    ;  ENTRY:  E = NUMBER OF BYTES IN REGION       FILE 20
                    ;          H,L = LOW ADDRESS OF REGION         FILE 20
                    ;                                              FILE 20
                    ;  EXIT :  A,E = 0                             FILE 20
                    ;          H,L = H,L(ENTRY) + E                FILE 20
                    ;                                              FILE 20
 1074               CRAL1  EQU  $                                  FILE 20
 1074   AF                 XRA  A         ;SET A TO ZERO           FILE 20
 1075               CA010  EQU  $                                  FILE 20
 1075   77                 MOV  M,A       ;SET BYTE TO ZERO        FILE 20
 1076   23                 INX  H         ;ADVANCE TO NEXT BYTE    FILE 20
 1077   1D                 DCR  E         ;ALL BYTES DONE?         FILE 20
 1078   C27510             JNZ  CA010     ;NO - DO NEXT BYTE       FILE 20
 107B   C9                 RET            ;YES - RETURN            FILE 20
                    ;                                              FILE 20
                    ;**************************************        FILE 20
                    ; CURPHD - HOME DOWN TO FIRST COLUMN OF *      FILE 20
                    ; FIRST LINE BEYOND END OF MEMORY       *      FILE 20
                    ;**************************************        FILE 20
 107C               CRPHD  EQU  $                                  FILE 20
 107C   CD8917             CALL CKSFK     ;DEFINE SOFT KEY MODE?   FILE 20
 107F   C0                 RNZ            ;YES - IGNORE HOME DOWN  FILE 20
 1080   CD771E             CALL CRPRT     ;NO - RETURN TO LEFT MARGIN  FILE 20
                    ;*************************                     FILE 20
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                                                                                   FILE 20
8080 MACRO ASSEMBLER, VER 2.4              ERRORS = 0 PAGE 80                      FILE 20
                                                                                   FILE 20
                                                                                   FILE 20
                                                                                   FILE 20
                       ; MOVE CURSOR TO NEXT ROW *                                 FILE 20
                       ;**************************                                 FILE 20
 1083                  HC100  EQU  $                                               FILE 20
 1083    3AC7FF               LDA  LTROW                                           FILE 20
 1086    FE17                 CPI  MXROW      ;IS LAST ROW DONE AT BOTTOM?         FILE 20
 1088    CC5B0C               CZ   RLLUP      ;YES - ROLL UP THE DISPLAY           FILE 20
 108B    2AC9FF               LHLD LTLIN      ;GET CURRENT ROW ADDRESS             FILE 20
 108E    7E                   MOV  A,M        ;GET LSB OF NEXT LINE POINTE         FILE 20
 108F    B7                   ORA  A          ;IS THERE A NEXT ROW?                FILE 20
 1090    CA9F10               JZ   HC200      ;NO - TERMINATE HOME DOWN            FILE 20
 1093    5F                   MOV  E,A        ;YES - SET E TO NEXT LINE            FILE 20
 1094    1C                   INR  E            ;POINTER OF NEXT LINE              FILE 20
 1095    CD880C               CALL RLUP2      ;SET "LSTLIN" AND "CURADR"           FILE 20
 1098    21C7FF               LXI  H,LTROW      ;TO NEXT LINE                      FILE 20
 109B    34                   INR  M          ;INCREMENT LAST ROW DONE             FILE 20
 109C    C38310               JMP HC100                                            FILE 20
                       ;*****************                                          FILE 20
                       ; LAST LINE FOUND *                                         FILE 20
                       ; SET ROW                                                   FILE 20
                       ;*****************                                          FILE 20
 109F                  HC200  EQU  $                                               FILE 20
 109F    CDBA0B               CALL NTCHO      ;GET 1ST CHAR OF LAST ROW            FILE 20
 10A2    FECC                 CPI  EOL        ;LAST ROW EMPTY?                     FILE 20
 10A4    3AC7FF               LDA  LTROW        ;(GET LAST ROW POSITION)           FILE 20
 10A7    CAAB10               JZ   HC210      ;YES - SET CURRENT ROW = LAS         FILE 20
 10AA    3C                   INR  A          ;NO - SET TO NEXT ROW                FILE 20
 10AB                  HC210  EQU  $                                               FILE 20
 10AB    32C0FF               STA  CRROW      ;SET CURRENT ROW NUMBER              FILE 20
 10AE    C9                   RET             ;RETURN                              FILE 20
                       ;                                                           FILE 20
                       ;*******************************                            FILE 20
                       ; CURPOS - CURSOR POSITIONING  *                            FILE 20
                       ;            INITIAL ENTRY POINT *                          FILE 20
                       ;*******************************                            FILE 20
 10AF                  CRPOS  EQU $                                                FILE 20
 10AF    3AC1FF               LDA  CRCOL      ;SET NEW COLUMN DEFAULT TO           FILE 20
 10B2    32DBFF               STA  NWCOL        ;CURRENT COLUMN POSITION           FILE 20
 10B5    3E7F                 MVI  A,377Q-NRWST                                    FILE 20
 10B7    CD1E05               CALL CRMF2     ;CLEAR NEW ROW SET FLAG               FILE 20
 10BA    2ED9                 MVI  L,SRNRW-BASE   ;PRESET RELATIVE ROW             FILE 20
 10BC    36FF                 MVI  M,-1         ;PARAMETER TO -1                   FILE 20
 10BE    21AF24               LXI  H,CPTAB    ;SET RANGE TABLE FOR CURSOR          FILE 20
 10C1    C3F304               JMP  ECAPA        ;POSITIONING                       FILE 20
                       ;                                                           FILE 20
                       ;*********************************                          FILE 20
                       ; NEW COLUMN POSITION IS DEFINED *                          FILE 20
                       ;*********************************                          FILE 20
 10C4                  CRP01  EQU  $                                               FILE 20
 10C4    0E4F                 MVI  C,MXCOL   ;SET MAXIMUM VALUE AND                FILE 20
 10C6    11DBFF               LXI  D,NWCOL     ;PARAMETER TO BE SET                FILE 20
 10C9    2EC1                 MVI  L,CRCOL-BASE     ;"CHKLIM"                      FILE 20
 10CB    46                   MOV B,M                                              FILE 20
 10CC    C3F210               JMP CP025     ;EVALUATE THE PARAMETER                FILE 20
                       ;************************                                   FILE 20
                       ; SCREEN ROW SPECIFIED *                                    FILE 20
                       ;************************                                   FILE 20
 10CF                  CRP02  EQU  $                                               FILE 20
 10CF    0E17                 MVI  C,MXROW   ;SET MAXIMUM VALUE AND                FILE 20
 10D1    11D9FF               LXI  D,SRNRW     ;PARAMETER TO BE SET                FILE 20
 10D4    2EC0                 MVI  L,CRROW-BASE     ;"CHKLIM"                      FILE 20
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                                                                FILE 20
                                                                FILE 20
                                                                FILE 20
                                                                FILE 20
                                                                FILE 20
10D6    46              MOV B,M                                 FILE 20
10D7    C3F210          JMP CP025     ;EVALUATE THE PARAMETER   FILE 20
                ;*****************************                  FILE 20
                ; NEW ROW POSITION IS DEFINED *                 FILE 20
                ;*****************************                  FILE 20
10DA            CRP03   EQU  $                                  FILE 20
10DA    3A6BFF          LDA  MKROW    ;GET MEMORY LOCK ROW      FILE 20
10DD    B7              ORA  A        ;MEMORY LOCK ENABLED?     FILE 20
10DE    C2F510          JNZ  CP050    ;YES - IGNORE PARAMETER   FILE 20
10E1    3E80            MVI  A,NRWST  ;NO - SET NEW ROW SET     FILE 20
10E3    CD9516          CALL STMF2      ;FLAG                   FILE 20
10E6    0EFF            MVI  C,255    ;SET MAXIMUM VALUE AND    FILE 20
10E8    11DAFF          LXI  D,NWROW    ;PARAMETER TO BE SET    FILE 20
10EB    3AC0FF          LDA  CRROW    ;COMPUTE CURRENT ABSOLUTE FILE 20
10EE    2EA3            MVI  L,TLINO    ;ROW ADDRESS            FILE 20
10F0    86              ADD  M                                  FILE 20
10F1    47              MOV  B,A      ;PUT IT INTO B-REGISTER   FILE 20
10F2            CP025   EQU  $                                  FILE 20
10F2    CD860F          CALL CKLIO    ;EVALUATE INPUT PARAMETER FILE 20
10F5            CP050   EQU  $                                  FILE 20
10F5    3A88FF          LDA  CHAR     ;RECALL THE INPUT CHARACTER FILE 20
10F8    E620            ANI  40Q      ;IS IT AN UPPER CASE CHAR? FILE 20
10FA    C2FB04          JNZ  ECAPB    ;NO - CONTINUE ESC SEQUENCE FILE 20
                ;                      YES - POSITION CURSOR    FILE 20
                ;                                               FILE 20
                ;****************************                   FILE 20
                ; EXECUTE COMPLETED SEQUENCE *                  FILE 20
                ;****************************                   FILE 20
10FD    3AD9FF          LDA  SRNRW    ;GET SCREEN ROW PARAMETER FILE 20
1100    B7              ORA A         ;WAS SCREEN ROW ADDRESS SET? FILE 20
1101    FA0711          JM  CP200     ;NO - SET ABSOLUTE ROW ADDR FILE 20
1104    32C0FF          STA  CRROW    ;YES - SET NEW SCREEN ROW FILE 20
                ;**************************                     FILE 20
                ; SET ABSOLUTE ROW ADDRESS *                    FILE 20
                ;**************************                     FILE 20
1107            CP200   EQU  $                                  FILE 20
1107    FC1B11          CM   CP500     ;FIND LOCATION OF NEW ROW FILE 20
                ;                                               FILE 20
                ;  SET COLUMN ADDRESS                           FILE 20
                ;                                               FILE 20
110A    3ADBFF          LDA  NWCOL    ;GET NEW COLUMN ADDRESS   FILE 20
                ;******************************                 FILE 20
                ; LOCATE ADDRESS OF CHARACTER *                 FILE 20
                ;******************************                 FILE 20
110D            CRP04   EQU  $                                  FILE 20
110D    32C1FF          STA  CRCOL    ;STORE NEW COLUMN ADDRESS FILE 20
1110    CD6907          CALL RADDR    ;FIND CHARACTER           FILE 20
1113    C8              RZ            ;CHARACTER FOUND - RETURN FILE 20
                ;**********************************             FILE 20
                ; CHARACTER NOT CURRENTLY STORED  *             FILE 20
                ; BUILD LINE OVER TO NEW POSITION *             FILE 20
                ;**********************************             FILE 20
1114    2E89            MVI L,DCHAR  ;SET UP BLANK FOR NEW POS. FILE 20
1116    3620            MVI M,ABLNK                             FILE 20
1118    C3E51F          JMP DSPLO     ;BUILD BLOCKS             FILE 20
                ;                                               FILE 20
                ;***********************************            FILE 20
                ; LOCATE NEW ABSOLUTE ROW LOCATION *            FILE 20
                ;***********************************            FILE 20
111B            CP500   EQU  $                                  FILE 20
```

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                                                                          FILE 20
                                                                          FILE 20
                                                                          FILE 20
                                                                          FILE 20
 111B   3A6FFF          LDA  MLGS2     ;GET TERMINAL MODE FLAGS           FILE 20
 111E   E680            ANI  NRWST     ;NEW ABSOLUTE ROW SET?             FILE 20
 1120   C8              RZ             ;NO - RETURN                       FILE 20
 1121   3ADAFF          LDA  NWROW   ;GET NEW ROW VALUE                   FILE 20
 1124   2EA3            MVI L,TLINO  ;SUBTRACT ROW CORRESP.               FILE 20
 1126   96              SUB M        ;TO TOP OF PAGE                      FILE 20
 1127   2EC0            MVI L,CRROW                                       FILE 20
 1129   DAE80B          JC  PVPG1      ;LOCATE PREVIOUS ROW PAGE          FILE 20
 112C   FE18            CPI MXROW+1                                       FILE 20
 112E   77              MOV M,A        ;SET NEW ROW                       FILE 20
 112F   D8              RC             ;RETURN IF SAME PAGE               FILE 20
                ;******************************                           FILE 20
                ; ROW IS AFTER BOTTOM OF PAGE *                           FILE 20
                ; ROLL DISPLAY UP             *                           FILE 20
                ;******************************                           FILE 20
 1130   3617            MVI M,MXROW  ;SET ROW                             FILE 20
 1132   D617            SUI  MXROW     ;SET ROLL COUNT                    FILE 20
 1134           SR010   EQU  $                                            FILE 20
 1134   CDA10B          CALL NTPG1     ;ROLL DISPLAY UP                   FILE 20
 1137   7E              MOV  A,M       ;GET NUMBER OF ROWS TO ROLL        FILE 20
 1138   91              SUB C          ;SUBTRACT ROWS ROLLED              FILE 20
 1139   C8              RZ             ;RETURN IF ROLL COMPLETE           FILE 20
 113A   77              MOV  M,A         ;SAVE NUMBER OF ROW TO ROLL      FILE 20
 113B   AF              XRA  A             ;(SET TO FIND COLUMN 0)        FILE 20
 113C   CD6C07          CALL RADRO     ;BUILD NEW ROWS                    FILE 20
 113F   C0              RNZ            ;RETURN IF OUT OF MEMORY           FILE 20
 1140   3A83FF          LDA  NROLL     ;GET # OF ROWS TO ROLL             FILE 20
 1143   C33411          JMP  SR010     ;ROLL AGAIN                        FILE 20
                ;*********************************                        FILE 20
                ; CURSEN - CURSOR POSITION SENSE *                        FILE 20
                ;*********************************                        FILE 20
                ;                                                         FILE 20
                ;  RLCRSN - SCREEN RELATIVE CURSOR SENSE                  FILE 20
                ;                                                         FILE 20
 1146           RCRSN   EQU $                                             FILE 20
 1146   3E04            MVI  A,RLSNS   ;SET RELATIVE SENSE FLAG           FILE 20
 1148   CD9516          CALL STMF2                                        FILE 20
 114B   C35311          JMP  CR100     ;GO SET CURSOR SENSE FLAG          FILE 20
                ;                                                         FILE 20
                ;  CURSEN - ABSOLUTE CURSOR SENSE                         FILE 20
                ;                                                         FILE 20
 114E           CRSEN   EQU  $                                            FILE 20
 114E   3EFB            MVI  A,377Q-RLSNS                                 FILE 20
 1150   CD1E05          CALL CRMF2     ;CLEAR RELATIVE SENSE FLAG         FILE 20
 1153           CR100   EQU  $                                            FILE 20
 1153   010010          LXI  B,SRSEN   ;SET UP BLOCK TRANSFER             FILE 20
 1156   C32616          JMP  SLXF0       ;FOR CURSOR SENSE PENDING        FILE 20
                ;                                                         FILE 20
 1159           CSNG0   EQU  $                                            FILE 20
 1159   01FFEF          LXI  B,-1-SRSEN   ;CLEAR CURSOR SENSE             FILE 20
 115C   CDE50F          CALL CBLXF        ;PENDING FLAG                   FILE 20
 115F   0626            MVI  B,APSND   ;SEND <ESC>-<&>                    FILE 20
 1161   CD0217          CALL ECOUT                                        FILE 20
 1164   3E61            MVI  A,SALLA   ;TRANSMIT LOWER CASE A             FILE 20
 1166   CD0817          CALL XUTDC                                        FILE 20
                ;***********************                                  FILE 20
                ; OUTPUT CURSOR COLUMN *                                  FILE 20
                ;***********************                                  FILE 20
 1169   210817          LXI  H,XUTDC   ;SEND NUMBER TO DATA COMM          FILE 20
 116C   3AC1FF          LDA  CRCOL     ;GET CURRENT CURSOR COLUMN         FILE 20
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116F   CD7B08          CALL B2DE1     ;CONVERT AND TRANSMIT VALUE
1172   3E63            MVI  A,ALCC    ;TRANSMIT LOWER CASE C
1174   CD0817          CALL XUTDC
                ;********************
                ; OUTPUT CURSOR ROW *
                ;********************
1177   3A6FFF          LDA  MLGS2     ;GET TERMINAL MODE FLAGS
117A   E604            ANI  RLSNS     ;SCREEN RELATIVE SENSING?
117C   3AC0FF          LDA  CRROW       ;(GET CURSOR ROW NUMBER)
117F   0659            MVI  B,YX        ;(SET DEFAULT PARAMETER)
1181   C28A11          JNZ  CR200     ;YES - OUTPUT SCREEN ADDRESS
1184   21A3FF          LXI  H,TLINO   ;NO - COMPUTE ABSOLUTE
1187   86              ADD  M           ;ROW NUMBER
1188   0652            MVI  B,RX      ;SET ABSOLUTE PARAMETER CHAR
                ;************************
                ; TRANSMIT ROW PARAMETER *
                ;************************
                ;
                ;  A = ROW VALUE
                ;  B = ROW PARAMETER LETTER
                ;
118A            CR200  EQU  $
118A   C5              PUSH B         ;SAVE ROW PARAMETER LETTER
118B   CD7E08          CALL B2DE2     ;CONVERT AND TRANSMIT VALUE
118E   F1              POP  PSW       ;RECALL ROW PARAMETER LETTER
118F   CD0817          CALL XUTDC     ;TRANSMIT ROW PARAMETER CHAR
                ;                     FALL INTO "SDTERM"
                ;************************************
                ; SDTERM - SEND BLOCK TERMINATOR *
                ; RS IF PAGE MODE, OTHERWISE CR(LF) *
                ;************************************
1192            STERM  EQU  $
1192   CD5216          CALL STRM1     ;SEND TERMINATOR
1195            STER1  EQU  $
1195   CDFD0F          CALL CRXON     ;CLEAR BLOCK TERMINATOR
1198   3E07            MVI  A,EDBLK   ;TELL DATA COMM THAT LAST
119A   C3B711          JMP  DMCTL       ;CHARACTER IN BLOCK IS OUT
                ;
                ;
                ;  DC2GO - OUTPUT DC2
                ;
119D            DC2GO  EQU $
119D   2170FF          LXI  H,MFLGS
11A0   7E              MOV  A,M       ;CLEAR DC2 PENDING FLAG
11A1   E6FE            ANI  -1-SDC2/256
11A3   77              MOV  M,A
11A4   3E0D            MVI  A,POMPT   ;TELL DATA COMM ROUTINE TO
11A6   C3B711          JMP  DMCTL       ;SEND PROMPT CODE
                ;****************************************
                ; DCMINT - DATA COMM INTERRUPT ROUTINE *
                ;****************************************
                ;
                ;  ENTRY:  PSW "PUSHED"
                ;               A = INTERRUPT CODE
                ;
11A9            DMINT  EQU  $
11A9   CD6591          CALL ITVEC     ;CHECK ALTERNATE INTERRUPT
11AC   F1              POP  PSW       ;RESTORE PSW AND A-REGISTER
11AD   C32678          JMP  ZCINT     ;EXECUTE NORMAL DATA COMM
                ;                       INTERRUPT ROUTINE
```

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                                                                              FILE 20
                                                                              FILE 20
                                                                              FILE 20
                                                                              FILE 20
                                                                              FILE 20
                  ;                                                           FILE 20
                  ;**********************************                         FILE 20
                  ; BRKDC - EXECUTE DATA COMM BREAK *                         FILE 20
                  ;**********************************                         FILE 20
 11B0             BRKDC   EQU   $                                             FILE 20
 11B0   3E05              MVI   A,PTBRK    ;EXECUTE DATACOM BREAK             FILE 20
 11B2   C3B711            JMP   DMCTL        ;CONTROL                         FILE 20
                  ;                                                           FILE 20
                  ;  DISMDM - DISCONNECT MODEM                                FILE 20
                  ;                                                           FILE 20
 11B5             DSMDM   EQU   $                                             FILE 20
 11B5   3E06              MVI   A,DSCNT    ;EXECUTE MODEM DISCONNECT          FILE 20
                  ;*******************************************                FILE 20
                  ; DCMCTL - PERFORM DATA COMM CONTROL FUNCTION *             FILE 20
                  ;*******************************************                FILE 20
                  ;                                                           FILE 20
                  ;  ENTRY:  A = FUNCTION TYPE NUMBER                         FILE 20
                  ;                                                           FILE 20
                  ;  EXIT :  Z - FUNCTION PERFORMED                           FILE 20
                  ;          NZ - FUNCTION NOT PERFORMED                      FILE 20
                  ;                                                           FILE 20
 11B7             DMCTL   EQU   $                                             FILE 20
 11B7   F5                PUSH PSW         ;SAVE A-REGISTER                   FILE 20
 11B8   CDDF0F            CALL CRMTE       ;REMOTE MODE ENABLED?              FILE 20
 11BB   C2C111            JNZ  DC010       ;YES - PERFORM FUNCTION            FILE 20
 11BE   F1                POP  PSW         ;NO - RESTORE A-REGISTER           FILE 20
 11BF   3C                INR  A           ;FORCE NZ                          FILE 20
 11C0   C9                RET              ;RETURN                            FILE 20
                  ;                                                           FILE 20
 11C1             DC010   EQU   $                                             FILE 20
 11C1   F1                POP  PSW         ;RESTORE A-REGISTER                FILE 20
 11C2             DMCT1   EQU   $          ;ENTRY TO FORCE DATA COMM CT       FILE 20
 11C2   CD1178            CALL ZCCTL       ;EXECUTE FUNCTION                  FILE 20
 11C5   D0                RNC              ;SUCCESSFUL - RETURN               FILE 20
 11C6             DCERR   EQU   $          ;PROCESS DATA COMM ERROR           FILE 20
 11C6   CA1470            JZ   ZBELL       ;NOT FATAL - SOUND BELL            FILE 20
                  ;*****************************                              FILE 20
                  ; DISPLAY TEST FAIL MESSAGES *                              FILE 20
                  ;*****************************                              FILE 20
 11C9             HNGU0   EQU   $                                             FILE 20
 11C9   CD5819            CALL DPMS0       ;DISPLAY THE ERROR MESSAGE         FILE 20
 11CC   3E04              MVI  A,FCRST     ;SET TO FORCE FULL RESET           FILE 20
 11CE   CD7513            CALL SCMFL         ;IF RESET KEY HIT                FILE 20
                  ;                                                           FILE 20
 11D1             HG010   EQU   $                                             FILE 20
 11D1   CD240F            CALL DSLN4       ;RE-ENABLE RESET ONLY              FILE 20
 11D4   C3D111            JMP  HG010       ;HANG TERMINAL                     FILE 20
                  ;                        *************************          FILE 20
                  ;                        * RESET KEY MUST BE HIT *          FILE 20
                  ;                        * TO RESTORE TERMINAL   *          FILE 20
                  ;                        * OPERATION             *          FILE 20
                  ;                        *************************          FILE 20
                  ;                                                           FILE 20
                  ;******************************************                 FILE 20
                  ; DCNUM - ACCUMULATE PARAMETER FOR ESC SEQ *                FILE 20
                  ;******************************************                 FILE 20
                  ;                                                           FILE 20
                  ;  EXIT :  Z TRUE                                           FILE 20
                  ;                                                           FILE 20
 11D7             DCNUM   EQU   $                                             FILE 20
```

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                                                                     FILE 20
                                                                     FILE 20
                                                                     FILE 20
                                                                     FILE 20
                                                                     FILE 20
 11D7   21DDFF          LXI  H,ICSGN   ;GET THE CURRENT SIGN         FILE 20
 11DA   7E              MOV  A,M         ;VALUE                      FILE 20
 11DB   B7              ORA  A         ;HAS ANY SIGN BEEN SET?       FILE 20
 11DC   C2E111          JNZ  DN005     ;YES - DON'T CHANGE IT        FILE 20
 11DF   3680            MVI  M,NSIGN   ;NO - SET NO SIGN FLAG        FILE 20
 11E1           DN005   EQU  $                                       FILE 20
 11E1   3A88FF          LDA  CHAR      ;GET INPUT CHARACTER          FILE 20
 11E4   D630            SUI  ZERO      ;EXTRACT BINARY VALUE         FILE 20
 11E6   5F              MOV  E,A       ;PUT VALUE IN E-REGISTER      FILE 20
 11E7   1600            MVI  D,0       ;SET MSB TO ZERO              FILE 20
 11E9   3AD4FF          LDA  RADIX     ;GET RADIX OF NUMBER          FILE 20
 11EC   2ADEFF          LHLD IDATA     ;GET ACCUMULATOR              FILE 20
 11EF   EB              XCHG           ;PUT ACCUMULATOR IN D,E       FILE 20
                ;                                                    FILE 20
 11F0           DN010   EQU  $                                       FILE 20
 11F0   19              DAD  D         ;ACCUMULATE NEW VALUE         FILE 20
 11F1   3D              DCR  A         ;RADIX ADJUSTMENT COMPLETED?  FILE 20
 11F2   C2F011          JNZ  DN010     ;NO - CONTINUE ADDING         FILE 20
 11F5   22DEFF          SHLD IDATA     ;YES - STORE NEW VALUE        FILE 20
 11F8   C30305          JMP  ECAP1     ;CONTINUE ESCAPE SEQUENCE     FILE 20
                ;*****************************************            FILE 20
                ; DCPLUS - PLUS SIGN RECEIVED FOR PARAMETER *         FILE 20
                ;*****************************************            FILE 20
 11FB           DPLUS   EQU  $                                       FILE 20
 11FB   0601            MVI  B,1       ;SET B-REG TO SIGN VALUE      FILE 20
 11FD   C30212          JMP  DM010     ;SET SIGN FLAG                FILE 20
                ;******************************************           FILE 20
                ; DCMNUS - MINUS SIGN RECEIVED FOR PARAMETER *        FILE 20
                ;******************************************           FILE 20
 1200           DMNUS   EQU  $                                       FILE 20
 1200   06FF            MVI  B,-1                                    FILE 20
 1202           DM010   EQU  $                                       FILE 20
 1202   21DDFF          LXI  H,ICSGN   ;GET CURRENT SIGN VALUE       FILE 20
 1205   7E              MOV  A,M                                     FILE 20
 1206   B7              ORA  A         ;SIGN SET ALREADY?            FILE 20
 1207   C20905          JNZ  ECEND     ;YES - ABORT ESCAPE SEQUENCE  FILE 20
 120A   70              MOV  M,B       ;NO - SET SIGN VALUE          FILE 20
 120B   C30305          JMP  ECAP1     ;CONTINUE ESCAPE SEQUENCE     FILE 20
                ;                                                    FILE 20
                ;*************************************                FILE 20
                ; DCTEST - EXECUTE DATA COMM SELF-TEST *              FILE 20
                ;*************************************                FILE 20
 120E           DTEST   EQU  $                                       FILE 20
 120E   CDDF0F          CALL CRMTE     ;REMOTE MODE ENABLED?         FILE 20
 1211   C8              RZ             ;NO - DON'T DO SELF-TEST      FILE 20
 1212   CD1478          CALL ZCTST     ;CALL DATA COMM SELF-TEST     FILE 20
 1215   DAC911          JC   HNGU0     ;HANG TERMINAL IF FATAL ERRO  FILE 20
 1218   C35919          JMP  DPMS1     ;DISPLAY MESSAGE AND EXIT     FILE 20
                ;                        IF SELF-TEST SUCCESSFUL     FILE 20
                ;**************************************               FILE 20
                ; DCXB2D - SEE IF SOURCE OF CHARACTER IS *            FILE 20
                ;   DATA COMM OR I/O BUFFER              *            FILE 20
                ;**************************************               FILE 20
                ;                                                    FILE 20
                ;  EXIT :  Z - INPUT IS NOT FROM DATA COMM OR I/O    FILE 20
                ;          NZ - INPUT IS FROM DATA COMM OR I/O       FILE 20
                ;          A DESTROYED                               FILE 20
                ;                                                    FILE 20
 121B           DXB2D   EQU  $                                       FILE 20
 121B   3A6EFF          LDA  DFLGS     ;GET DATA TRANSFER FLAGS      FILE 20
```

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                                                                              FILE 20
                                                                              FILE 20
                                                                              FILE 20
                                                                              FILE 20
 121E   E681            ANI  SACOM+XF2DS    ;SET Z-FLAG                       FILE 20
 1220   C9              RET                 ;RETURN                           FILE 20
                 ;                                                            FILE 20
                 ;******************************                               FILE 20
                 ; DELAY0 - PAUSE FOR 1 SECOND *                              FILE 20
                 ;******************************                               FILE 20
 1221            DLAY0  EQU  $                                                FILE 20
 1221   3E18            MVI  A,MXROW+1   ;REMOVE CURSOR AND                   FILE 20
 1223   CD200F          CALL DSLN2       ;RE-ENABLE RESET KEY                 FILE 20
 1226   2E64            MVI  L,100       ;DELAY FOR 1 SECOND                  FILE 20
                 ;********************************                             FILE 20
                 ; DELAY - DELAY 10 MILLISECONDS *                            FILE 20
                 ; TIMES COUNT IN L              *                            FILE 20
                 ;********************************                             FILE 20
 1228            DELAY  EQU  $                                                FILE 20
 1228   3E80            MVI  A,STROM                                          FILE 20
 122A   D370            OUT  POCSR       ;RESET THE TIMER                     FILE 20
 122C   3AF5FF          LDA  PCCTL       ;RESTORE PROCESSOR STATE             FILE 20
 122F   D370            OUT  POCSR                                            FILE 20
                 ;                                                            FILE 20
 1231            DY010  EQU  $                                                FILE 20
 1231   AF              XRA  A           ;CLEAR THE INTERRUPT FLAG            FILE 20
 1232   32F6FF          STA  ITFLG                                            FILE 20
 1235            DY020  EQU  $                                                FILE 20
 1235   76              HLT              ;SLEEP UNTIL INTERRUPTED             FILE 20
 1236   3AF6FF          LDA  ITFLG       ;GET INTERRUPT FLAG                  FILE 20
 1239   FE03            CPI  TRINT       ;TIMER INTERRUPT?                    FILE 20
 123B   C23512          JNZ  DY020       ;NO - CONTINUE WAITING               FILE 20
 123E   2D              DCR L        ;ENOUGH TIMER INTERRUPTS?                FILE 20
 123F   C23112          JNZ DY010      ;NO - CONTINUE TIMING                  FILE 20
 1242   C9              RET              ;YES - RETURN                        FILE 20
                 ;                                                            FILE 20
                 ;***************************                                  FILE 20
                 ; <F> - SEND FUNCTION DATA *                                 FILE 20
                 ;***************************                                  FILE 20
 1243            SDCD2  EQU  $                                                FILE 20
 1243   3ADEFF          LDA  IDATA       ;GET ACCUMULATED VALUE               FILE 20
 1246   47              MOV  B,A         ;PUT CODE INTO B-REGISTER            FILE 20
 1247   3E0C            MVI  A,SDFCT     ;SET DATA COMM CONTROL CODE          FILE 20
 1249   CDB711          CALL DMCTL       ;PERFORM FUNCTION                    FILE 20
 124C   C0              RNZ              ;EXIT IF FUNCTION NOT DONE           FILE 20
                 ;                        OTHERWISE, SEND SCREEN DATA         FILE 20
                 ;***************                                              FILE 20
                 ; DISPLAY SEND *                                             FILE 20
                 ;***************                                              FILE 20
 124D            DSEND  EQU  $                                                FILE 20
 124D   3E08            MVI  A,CIOKY                                          FILE 20
 124F   CD0870          CALL ZBCTL       ;I/O CONTROL KEY DOWN ALSO?          FILE 20
 1252   C20E12          JNZ  DTEST       ;YES - DO DATA COMM SELF-TES         FILE 20
 1255   3AF8FF          LDA  CFLGS       ;GET COMMON FLAGS                    FILE 20
 1258   E610            ANI  RMSET       ;REMOTE ENABLED?                     FILE 20
 125A   116DFF          LXI  D,RKYCD-ETRCD*2     ;(SET KEY INDEX)             FILE 20
 125D   CA6F15          JZ   IKEYS       ;NO - PERFORM RECORD COMMAND         FILE 20
 1260   010040          LXI  B,SNTER     ;YES - SET XFR PENDING FLAG          FILE 20
 1263   3AF3FF          LDA  MFLG2       ;NO - GET TERMINAL MODE FLAG         FILE 20
 1266   E602            ANI  BKMDE       ;BLOCK MODE ENABLED?                 FILE 20
 1268   CA8312          JZ   DS200       ;NO - DO CHARACTER MODE STAR         FILE 20
 126B   CD8917          CALL CKSFK       ;SOFT KEY MODE?                      FILE 20
 126E   C29712          JNZ  DP220       ;YES - DON'T SET TERMINATOR          FILE 20
 1271   3AFAFF          LDA  KJMP2       ;YES - GET KEYBOARD JUMPERS          FILE 20
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1274    E601           ANI   ATTRM      ;AUTO TERMINATE ENABLED?               FILE 20
1276    CA9712         JZ    DP220      ;NO - DO DON'T MOVE CURSOR             FILE 20
1279    CDCD16         CALL  SATRM      ;YES - SET NON-DISPLAYING              FILE 20
                ;                        TERMINATOR                            FILE 20
127C    C8             RZ               ;EXIT IF NOT SUCCESSFUL                FILE 20
                ;****************************************                      FILE 20
                ; FIRST TRANSMIT CHARACTER LOCATED - SET *                     FILE 20
                ;   TRANSFER PENDING FLAG               *                      FILE 20
                ;****************************************                      FILE 20
127D            DS100  EQU   $                                                 FILE 20
127D    010040         LXI   B,SNTER    ;SET B,C XFR PENDING FLAG              FILE 20
1280    C33116         JMP   SLXF1         ;FOR BLOCK MODE TRANSFER            FILE 20
                ;                                                              FILE 20
                ;*****************************************                     FILE 20
                ; AUTO TERMINATOR JUMPER NOT REMOVED - DO *                    FILE 20
                ;   NORMAL DATA ENTRY FROM DISPLAY       *                     FILE 20
                ;*****************************************                     FILE 20
1283            DS200  EQU   $                                                 FILE 20
1283    3AFBFF         LDA   KJMPR      ;GET KEYBOARD JUMPERS 1                FILE 20
1286    E6C0           ANI   HDSHK+D2SND                                       FILE 20
1288    EE40           XRI   HDSHK      ;HANDSHAKE ENABLED?                    FILE 20
128A    C49804         CNZ   CKCT1      ;NO - SET BLOCK TRIGGER                FILE 20
                ;                                                              FILE 20
128D    CD2916         CALL  SLXFA      ;SET TRANSFER PENDING FLAG             FILE 20
1290            DS215  EQU   $                                                 FILE 20
1290    CD7317         CALL  CKFMS      ;FORMAT/SOFT KEY DEFINE MODE           FILE 20
1293    C0             RNZ              ;YES - DON'T MOVE CURSOR               FILE 20
1294    C37A1E         JMP   CRET1      ;NO - PUT CURSOR AT BEGINNIN           FILE 20
                ;                         OF LINE (A = 0)                      FILE 20
                ;                                                              FILE 20
                ;  SET KEYBOARD BLOCK TRANSFER                                 FILE 20
                ;                                                              FILE 20
1297            DP220  EQU   $                                                 FILE 20
1297    CD3116         CALL  SLXF1      ;SET BLOCK MODE XFR PENDING            FILE 20
129A    3A70FF         LDA   MFLGS      ;GET TRANSFER PENDING FLAGS            FILE 20
129D    E601           ANI   SDC2/256   ;DC2 TO BE SENT?                       FILE 20
129F    C0             RNZ              ;YES - DON'T MOVE CURSOR               FILE 20
12A0    CDD40F         CALL  CLNMD      ;LINE MODE?                            FILE 20
12A3    CA9012         JZ    DS215      ;YES - SET CURSOR IN LINE              FILE 20
                ;****************************************                      FILE 20
                ; DPSEN1 - HOME CURSOR FOR TRANSMISSION *                      FILE 20
                ;****************************************                      FILE 20
12A6            DSEN1  EQU   $                                                 FILE 20
12A6    CD3B17         CALL  XOHME      ;HOME CURSOR                           FILE 20
12A9    CD7317         CALL  CKFMS      ;FORMAT/SOFT KEY DEFINE MODE           FILE 20
12AC    C0             RNZ              ;YES - RETURN                          FILE 20
12AD    C37A1E         JMP   CRET1      ;NO - SET CURSOR TO COLUMN 0           FILE 20
                ;                                                              FILE 20
                ;                                                              FILE 20
                ; * * * * * * * * * * * * * * * * * * * * * * * * * * *        FILE 20
                ;                                                              FILE 20
                ;  DPSGO - SEND DISPLAY TO DATACOM                             FILE 20
                ;                                                              FILE 20
                ;      ENTRY:  CURCOL,CURROW SET TO STARTING                   FILE 20
                ;                   LOCATION                                   FILE 20
                ;                                                              FILE 20
                ;      EXIT :  ALL REGISTERS DESTROYED                         FILE 20
                ;                                                              FILE 20
12B0            DPSGO  EQU   $                                                 FILE 20
12B0    CDD922         CALL  IITDG      ;INIT DISPLAY GET ROUTINE              FILE 20
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                                                                      FILE 20
                                                                      FILE 20
                                                                      FILE 20
                                                                      FILE 20
                                                                      FILE 20
12B3   C2FF12          JNZ  DG200     ;TERMINATE IF NO CHARACTERS     FILE 20
12B6   3EFF            MVI  A,SPXFR   ;SET TERMINATOR FUNCTION TO     FILE 20
12B8   326DFF          STA  TMFCT       ;TERMINATE TRANSFER           FILE 20
12BB            DG010  EQU  $                                         FILE 20
12BB   3E0D            MVI  A,SCHST   ;SET CHARACTER SET FOR          FILE 20
12BD   CD0870          CALL ZBCTL       ;FOREIGN TERMINALS?           FILE 20
12C0   DC0817          CC   XUTDC     ;YES - OUTPUT SI/SO             FILE 20
                ;                                                     FILE 20
                ;  OUTPUT CHARACTERS FROM DISPLAY                     FILE 20
                ;                                                     FILE 20
12C3            DG020  EQU  $                                         FILE 20
12C3   CD6921          CALL GTDSP     ;ANY CHARACTER?                 FILE 20
12C6   DAD212          JC   DG100     ;NO - CHECK TERMINATION         FILE 20
12C9   CD0817          CALL XUTDC     ;YES - TRANSMIT THE CHARACTE    FILE 20
12CC   D2C312          JNC  DG020     ;CONTINUE IF NO DATA COMM ER    FILE 20
12CF   C32613          JMP  DG230     ;ELSE, TERMINATE OUTPUT         FILE 20
                ;                                                     FILE 20
                ;  NON-CHARACTER FOUND - CHECK TERMINATION            FILE 20
                ;                                                     FILE 20
12D2            DG100  EQU  $                                         FILE 20
12D2   FAFF12          JM   DG200     ;END OF DISPLAY - TERMINATE     FILE 20
12D5   47              MOV  B,A       ;SAVE EXIT STATUS               FILE 20
12D6   CDCE0F          CALL GMODE     ;PAGE MODE ENABLED?             FILE 20
12D9   CA0E13          JZ   DG210     ;NO - END WITH CR(LF)           FILE 20
12DC   CD7817          CALL CKFMT     ;FORMAT MODE?                   FILE 20
12DF   CAEB12          JZ   DG110     ;NO - SEND CR AND LF            FILE 20
12E2   3A0378          LDA  RCSEP     ;YES - END WITH RECORD          FILE 20
12E5   CD0817          CALL XUTDC       ;SEPARATOR                    FILE 20
12E8   C3BB12          JMP  DG010     ;CONTINUE THRU DISPLAY          FILE 20
                ;                                                     FILE 20
                ;                                                     FILE 20
                ;  EOL FOR NON-FORMAT PAGE MODE - SEND CR AND LF      FILE 20
                ;                                                     FILE 20
12EB            DG110  EQU  $                                         FILE 20
12EB   3E0D            MVI  A,CR      ;SEND RETURN                    FILE 20
12ED   CD0817          CALL XUTDC       ;AND                          FILE 20
12F0   CD6616          CALL STRM3         ;LINE FEED                  FILE 20
12F3   CD8917          CALL CKSFK     ;SOFT KEY DEFINE MODE?          FILE 20
12F6   CCC70A          CZ   LFEED     ;NO - DO LINE FEED              FILE 20
12F9   CD1D0F          CALL DSLN1     ;SET DISPLAY CURSOR ROW         FILE 20
12FC   C3BB12          JMP  DG010     ;CONTINUE THRU DISPLAY          FILE 20
                ;                                                     FILE 20
                ;  END OF DISPLAY - SEND TERMINATOR                   FILE 20
                ;                                                     FILE 20
12FF            DG200  EQU  $                                         FILE 20
12FF   3A0478          LDA  BKTRM     ;SEND BLOCK TERMINATOR          FILE 20
1302   CD0817          CALL XUTDC       ;CHARACTER                    FILE 20
1305   CDCE0F          CALL GMODE     ;PAGE MODE?                     FILE 20
1308   CA1C13          JZ   DG220     ;NO - SEND CR(LF)               FILE 20
130B   C31F13          JMP  DG225     ;YES - CLEAR XFR PENDING FLA    FILE 20
                ;*****************************************            FILE 20
                ; NON-PAGE MODE TERMINATION - SEND CR(LF) *           FILE 20
                ;*****************************************            FILE 20
130E            DG210  EQU  $                                         FILE 20
130E   CD7317          CALL CKFMS     ;FORMAT/SOFT KEY MODE?          FILE 20
1311   C21C13          JNZ  DG220     ;YES - DON'T DO LINE FEED       FILE 20
1314   3AF3FF          LDA  MFLG2     ;NO - GET SOFT MODE FLAGS       FILE 20
1317   E604            ANI  ATOLF     ;AUTO LINE FEED ENABLED?        FILE 20
1319   C4C70A          CNZ  LFEED     ;YES - DO LINE FEED             FILE 20
                ;*************************                            FILE 20
```

```
                                                                         FILE 20
                                                                         FILE 20
                                                                         FILE 20
                                                                         FILE 20
                                                                         FILE 20
                         ; SEND CR(LF) TERMINATOR *                      FILE 20
                         ;*************************                      FILE 20
 131C                    DG220   EQU   $                                 FILE 20
 131C     CD5216                 CALL  STRM1      ;SEND CR(LF)           FILE 20
 131F                    DG225   EQU   $                                 FILE 20
 131F     CD9511                 CALL  STER1      ;MARK END OF OUTPUT BLOCK   FILE 20
 1322     AF                     XRA   A          ;RESET TERMINATOR FUNCTION  FILE 20
 1323     326DFF                 STA   TMFCT        ;TO DELETE TERMINATOR     FILE 20
 1326                    DG230   EQU   $                                 FILE 20
 1326     01FFBF                 LXI   B,-1-SNTER                        FILE 20
 1329     CDE50F                 CALL  CBLXF      ;CLEAR ENTER PENDING FLAG   FILE 20
 132C     C3991C                 JMP   CADV1      ;CLEAR CURSOR ADVANCE FLAG  FILE 20
                         ;                          AND EXIT             FILE 20
                         ;                                               FILE 20
                         ;***************************************        FILE 20
                         ; A2OUTB - PUT BYTE INTO OUTPUT BUFFER *         FILE 20
                         ;***************************************        FILE 20
                         ;  ENTRY:  A = BYTE TO BE OUTPUT                FILE 20
                         ;                                               FILE 20
                         ;  EXIT :  H = BASEH                            FILE 20
                         ;          B2DEND = B2DEND + 1                  FILE 20
                         ;          D,E,L DESTROYED                      FILE 20
                         ;                                               FILE 20
                         ;  ECOUTB - OUTPUT <ESC>                        FILE 20
                         ;                                               FILE 20
                         ;          ENTRY:  B = SECOND CHARACTER IN ESCAPE SEQ   FILE 20
                         ;                                               FILE 20
 132F                    EOUTB   EQU   $                                 FILE 20
 132F     3E1B                   MVI   A,ESC      ;SET A TO ESC          FILE 20
 1331     CD3513                 CALL  AOUTB      ;PUT ESC INTO OUTPUT BUFFER   FILE 20
 1334                    BOUTB   EQU   $                                 FILE 20
 1334     78                     MOV   A,B        ;PUT SECOND CHAR INTO A-REG   FILE 20
                         ;                         FALL INTO OUTPUT ROUTINE     FILE 20
                         ;                                               FILE 20
 1335                    AOUTB   EQU   $                                 FILE 20
 1335     213BFF                 LXI   H,BDEND                           FILE 20
 1338     34                     INR   M          ;INCREMENT TO NEXT POSITION   FILE 20
 1339     6E                     MOV   L,M        ;GET NEW ADDRESS       FILE 20
 133A     77                     MOV   M,A        ;STORE THE BYTE        FILE 20
 133B     C9                     RET              ;RETURN                FILE 20
                         ;                                               FILE 20
                         ;****************************                   FILE 20
                         ; ENTLCL - ENTER LOCAL MODE *                   FILE 20
                         ;****************************                   FILE 20
 133C                    ETLCL   EQU   $                                 FILE 20
 133C     CDC20F                 CALL  CEDIT      ;EDIT MODE ENABLED?    FILE 20
 133F     CA4A13                 JZ    EL100      ;NO - GO INTO LOCAL MODE   FILE 20
 1342     3E08                   MVI   A,RMOTE    ;YES - INHIBIT TRANSITION TO   FILE 20
 1344     21F3FF                 LXI   H,MFLG2      ;LOCAL MODE          FILE 20
 1347     B6                     ORA   M          ;FORCE REMOTE FLAG ON  FILE 20
 1348     77                     MOV   M,A                               FILE 20
 1349     C9                     RET              ;RETURN                FILE 20
                         ;                                               FILE 20
 134A                    EL100   EQU   $                                 FILE 20
 134A     3E04                   MVI   A,STLCL    ;SET DATACOM FOR LOCAL FILE 20
 134C     CDB711                 CALL  DMCTL        ;OPERATION           FILE 20
 134F     3EEF                   MVI   A,377Q-RMSET   ;CLEAR REMOTE MODE FLAG   FILE 20
                         ;******************************                 FILE 20
                         ; CLCMFL - CLEAR COMMON FLAGS *                 FILE 20
                         ;******************************                 FILE 20
```

```
                                                                     FILE 20
                                                                     FILE 20
                                                                     FILE 20
                   ;                                                 FILE 20
                   ;  ENTRY:  A = 377B-FLAG BIT TO BE CLEARED        FILE 20
                   ;                                                 FILE 20
                   ;  EXIT :  A,H,L DESTROYED                        FILE 20
                   ;                                                 FILE 20
 1351              CCMFL  EQU  $                                     FILE 20
 1351   21F8FF            LXI  H,CFLGS                               FILE 20
 1354   A6                ANA  M          ;CLEAR THE FLAG BIT        FILE 20
 1355   77                MOV  M,A        ;STORE THE NEW SETTINGS    FILE 20
 1356   C9                RET             ;RETURN                    FILE 20
                   ;                                                 FILE 20
                   ;                                                 FILE 20
                   ;  ENTREM - ENTER REMOTE MODE                     FILE 20
                   ;                                                 FILE 20
 1357              ETREM  EQU  $                                     FILE 20
 1357   CDC20F            CALL CEDIT      ;EDIT MODE ENABLED?        FILE 20
 135A   CA6513            JZ   ER100      ;NO - GO INTO REMOTE MODE  FILE 20
 135D   3EF7              MVI  A,377Q-RMOTE   ;YES - INHIBIT         FILE 20
 135F   21F3FF            LXI  H,MFLG2     ;TRANSITION TO REMOTE MODE FILE 20
 1362   A6                ANA  M          ;FORCE REMOTE FLAG OFF     FILE 20
 1363   77                MOV  M,A                                   FILE 20
 1364   C9                RET             ;RETURN                    FILE 20
                   ;                                                 FILE 20
 1365              ER100  EQU  $                                     FILE 20
 1365   97                SUB  A          ;CLEAR THE DATA PENDING    FILE 20
 1366   3270FF            STA  MFLGS       ;FLAGS                    FILE 20
 1369   3EFC              MVI  A,377Q-SINRY-SVREC                    FILE 20
 136B   CD1E05            CALL CRMF2      ;CLEAR BINARY RECORD PENDING FILE 20
 136E   3E03              MVI  A,STREM    ;SET DATACOM FOR REMOTE    FILE 20
 1370   CDC211            CALL DMCT1       ;OPERATION                FILE 20
 1373   3E10              MVI  A,RMSET    ;SET REMOTE MODE FLAG      FILE 20
                   ;****************************                      FILE 20
                   ; STCMFL - SET COMMON FLAGS *                     FILE 20
                   ;****************************                      FILE 20
                   ;                                                 FILE 20
                   ;  ENTRY:  A = FLAG BIT TO BE SET                 FILE 20
                   ;                                                 FILE 20
                   ;  EXIT :  A,H,L DESTROYED                        FILE 20
                   ;                                                 FILE 20
 1375              SCMFL  EQU  $                                     FILE 20
 1375   21F8FF            LXI  H,CFLGS                               FILE 20
 1378   B6                ORA  M          ;ADD BIT TO "CMFLGS"       FILE 20
 1379   77                MOV  M,A        ;STORE NEW SETTINGS        FILE 20
 137A   C9                RET             ;RETURN                    FILE 20
                   ;                                                 FILE 20
                   ;                                                 FILE 20
                   ; * * * * * * * * * * * * * * * * * * * * * * * * FILE 20
                   ;                                                 FILE 20
                   ;  FCTKEY - FUNCTION KEY PRESSED (F1-F8)          FILE 20
                   ;                                                 FILE 20
                   ;      ENTRY:  C = FUNCTION KEY CODE (360-367B)   FILE 20
                   ;                                                 FILE 20
                   ;      EXIT :  DFLGS(FCTK2D) = 1, FUNCTION KEY    FILE 20
                   ;                DATA TO BE USED AS NORMAL        FILE 20
                   ;                KEYBOARD CHARACTERS              FILE 20
                   ;              DFLGS(FCTK2D) = 0                  FILE 20
                   ;                MFLGS(SFCTKY) = 0, KEY WAS       FILE 20
                   ;                  INTERPRETED LOCALLY ONLY       FILE 20
                   ;                MFLGS(SFCTKY) = 1, DATA WAITING  FILE 20
                   ;                  FOR BLOCK TRANSFER TRIGGER TO  FILE 20
```

```
                                                                FILE 20
                                                                FILE 20
                                                                FILE 20
                                                                FILE 20
                                                                FILE 20
                      ;               SEND TO CPU               FILE 20
                      ;           ALL REGISTERS DESTROYED       FILE 20
                      ;                                         FILE 20
137B                  FTKEY   EQU  $                            FILE 20
137B   79                     MOV  A,C      ;COMPUTE NUMBER OF LINES TO   FILE 20
137C   87                     ADD  A          ;SEARCH:        FILE 20
137D   D6DF                   SUI  FTADJ        ;2*(FUNCTION NUMBER) - 1  FILE 20
137F   21A6FF                 LXI  H,STKYS                      FILE 20
1382   CD4E0B                 CALL MKSC1    ;LOCATE THE ATTRIBUTE LINE    FILE 20
                      ;                                         FILE 20
                      ;  DEFINITION FOUND - PERFORM FUNCTION    FILE 20
                      ;                                         FILE 20
1385   7D                     MOV  A,L      ;COMPUTE LOCATION OF          FILE 20
1386   D608                   SUI  ABLOC      ;ATTRIBUTE CODE             FILE 20
1388   5F                     MOV  E,A                          FILE 20
1389   54                     MOV  D,H                          FILE 20
138A   CD6A17                 CALL CHAIN    ;GET ADDRESS OF DATA LINE     FILE 20
138D   22A4FF                 SHLD CRFKY    ;SAVE FIRST CHARACTER ADDRES  FILE 20
                      ;                       TO FORCE SKIP OVER "ENDPR"  FILE 20
1390   1A                     LDAX D        ;GET ATTRIBUTE CODE           FILE 20
1391   FE4E                   CPI  NX       ;NORMAL MODE?                 FILE 20
1393   DAA713                 JC   FT200    ;< - DO LOCAL ONLY            FILE 20
1396   3E10                   MVI  A,FTK2D    ;(SET DATA XFR FLAG)        FILE 20
1398   CA6D16                 JZ   STDFL    ;YES - SET NORMAL KEY XFR     FILE 20
139B   CDCE0F                 CALL GMODE    ;> - SET BLOCK TRANSFER       FILE 20
139E   010020                 LXI  B,SCTKY    ;FOR FUNCTION KEY           FILE 20
13A1   CA2916                 JZ   SLXFA    ;SET FLAG FOR NOT PAGE MODE   FILE 20
13A4   C33116                 JMP  SLXF1      ;ELSE SET FOR PAGE XFR      FILE 20
                      ;                                         FILE 20
                      ;**********************************       FILE 20
                      ; PERFORM LOCAL ONLY KEY FUNCTION *       FILE 20
                      ;**********************************       FILE 20
13A7                  FT200   EQU  $                            FILE 20
13A7   CD2515                 CALL GFCTK    ;GET FUNCTION KEY DATA        FILE 20
13AA   C8                     RZ            ;NONE LEFT - RETURN           FILE 20
13AB                  FT210   EQU  $                            FILE 20
13AB   329CFF                 STA  CARIN    ;SAVE FUNCTION KEY CHARACTER  FILE 20
13AE   CDC403                 CALL CHINT    ;PROCESS DATA LOCALLY         FILE 20
13B1   3A9CFF                 LDA  CARIN    ;RECALL FUNCTION CHARACTER    FILE 20
13B4   FE0D                   CPI  CR       ;IS IT A RETURN?              FILE 20
13B6   C2A713                 JNZ  FT200    ;NO - DO THE NEXT BYTE        FILE 20
13B9   3AF3FF                 LDA  MFLG2    ;YES - GET HARD MODE FLAGS    FILE 20
13BC   E604                   ANI  ATOLF    ;AUTO LINE FEED ENABLED?      FILE 20
13BE   CAA713                 JZ   FT200    ;NO - DO NEXT FUNCTION BYTE   FILE 20
13C1   0E0A                   MVI  C,LF     ;YES - PERFORM LINE FEED      FILE 20
13C3   C3AB13                 JMP  FT210      ;FUNCTION                   FILE 20
                      ;                                         FILE 20
                      ;                                         FILE 20
                      ; * * * * * * * * * * * * * * * * * * * * * * * * * *  FILE 20
                      ;                                         FILE 20
                      ;  FKEYGO - TRANSMIT FUNCTION KEY         FILE 20
                      ;                                         FILE 20
                      ;      ENTRY:  DON'T CARE                 FILE 20
                      ;                                         FILE 20
                      ;      EXIT :  MFLGS1(SFCTKY) = 0         FILE 20
                      ;              ALL REGISTERS DESTROYED    FILE 20
                      ;                                         FILE 20
13C6                  FEYGO   EQU  $                            FILE 20
13C6   01FFDF                 LXI  B,-1-SCTKY   ;CLEAR FUNCTION KEY       FILE 20
13C9   CDE50F                 CALL CBLXF        ;PENDING FLAG             FILE 20
```

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13CC   3A6EFF          LDA  DFLGS      ;GET DATA TRANSFER FLAGS          FILE 20
13CF   E610            ANI  FTK2D      ;OPERATE AS NORMAL KEY?           FILE 20
13D1   C0              RNZ             ;YES - RETURN TO WAIT LOOP        FILE 20
                ;                                                        FILE 20
                ;  TRANSMIT FUNCTION KEY DATA                            FILE 20
                ;                                                        FILE 20
13D2            FG010  EQU  $                                            FILE 20
13D2   CD2515          CALL GFCTK      ;GET NEXT FUNCTION KEY CHAR       FILE 20
13D5   CA9211          JZ   STERM      ;SEND TERMINATOR IF NO MORE       FILE 20
                ;                        DATA                            FILE 20
13D8   210478          LXI  H,BKTRM                                      FILE 20
13DB   BE              CMP  M          ;BLOCK TERMINATOR CHARACTER?      FILE 20
13DC   CA9211          JZ   STERM      ;YES - OUTPUT TERMINATOR          FILE 20
13DF   CD0817          CALL XUTDC      ;NORMAL DATA - TRANSMIT IT        FILE 20
13E2   C3D213          JMP  FG010      ;DO NEXT CHARACTER                FILE 20
                ;                                                        FILE 20
                ;                                                        FILE 20
                ;  MNMDON - MONITOR MODE ON                              FILE 20
                ;                                                        FILE 20
13E5            MMDON  EQU  $                                            FILE 20
13E5   3E08            MVI  A,STMON    ;SET DATACOM MONITOR              FILE 20
13E7   CDB711          CALL DMCTL        ;MODE                           FILE 20
13EA   C0              RNZ             ;DON'T MONITOR IF NOT SET         FILE 20
13EB   06FF            MVI  B,377Q     ;SET TO BLINK LED                 FILE 20
13ED   C3F213          JMP  F0100      ;SET FUNCTION TABLE               FILE 20
                ;*****************************************                FILE 20
                ; FDISON - TURN ON FUNCTION DISABLE MODE *               FILE 20
                ;*****************************************                FILE 20
13F0            FISON  EQU $                                             FILE 20
13F0   0600            MVI  B,0        ;SET FOR NO BLINK                 FILE 20
13F2            F0100  EQU  $                                            FILE 20
13F2   3E01            MVI  A,DPFNC    ;TURN ON DISPLAY FUNCTIONS        FILE 20
13F4   CD0E70          CALL ZTMD1        ;FLAG                           FILE 20
13F7   21DB24          LXI  H,FISTB    ;SET H,L TO NEW RANGE TABLE       FILE 20
13FA   C31505          JMP  ECEN1      ;SET RANGE TABLE AND EXIT         FILE 20
                ;***********************************                      FILE 20
                ; FDISOF - TURN OFF FUNCTION DISABLE *                   FILE 20
                ;***********************************                      FILE 20
13FD            FISOF  EQU  $                                            FILE 20
13FD   CD8917          CALL CKSFK      ;SOFT KEY DEFINE MODE?            FILE 20
1400   CA0914          JZ   FF010      ;NO - DO NORMAL PROCESSING        FILE 20
1403   CD1B12          CALL DXB2D      ;INPUT FROM KEYBOARD?             FILE 20
1406   C4C10C          CNZ  SKYOF      ;NO - RESTORE NORMAL DISPLAY      FILE 20
1409            FF010  EQU  $                                            FILE 20
1409   CD2B14          CALL FESC1      ;DISPLAY INPUT CHARACTER          FILE 20
140C   3A69FF          LDA  LCHAR                                        FILE 20
140F   FE1B            CPI  ESC        ;WAS THE LAST CHAR <ESC>?         FILE 20
1411   C0              RNZ          ;NO - RETURN                         FILE 20
                ;                YES - TURN OFF DISPLAY FCTS             FILE 20
1412            DCTOF  EQU  $                                            FILE 20
1412   3E09            MVI  A,STNRM    ;RESTORE DATACOM TO               FILE 20
1414   CD1178          CALL ZCCTL        ;NORMAL MODE                    FILE 20
1417   CD0905          CALL ECEND   ;YES - TURN OFF DISABLE MODE         FILE 20
141A   3E01            MVI  A,DPFNC    ;TURN OFF DISPLAY FUNCTIONS       FILE 20
141C   C31170          JMP  ZLMD1        ;FLAG                           FILE 20
                ;**************************                               FILE 20
                ; FUNCTION DISABLE ESCAPE *                              FILE 20
                ;**************************                               FILE 20
141F            FDESC  EQU  $                                            FILE 20
141F   CD8917          CALL CKSFK      ;SOFT KEY DEFINE MODE?            FILE 20
```

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                                                                                FILE 20
8080 MACRO ASSEMBLER, VER 2.4            ERRORS = 0 PAGE 93                     FILE 20
                                                                                FILE 20
                                                                                FILE 20
                                                                                FILE 20
 1422    CA2B14            JZ    FESC1       ;NO - DO NORMAL PROCESSING         FILE 20
 1425    CD1B12            CALL  DXB2D       ;INPUT FROM KEYBOARD?              FILE 20
 1428    C4C10C            CNZ   SKYOF       ;NO - RESTORE NORMAL DISPLAY       FILE 20
 142B             FESC1    EQU   $                                              FILE 20
 142B    CD5720            CALL  DPCHR       ;DISPLAY THE ESCAPE CODE           FILE 20
 142E    C3991C            JMP   CADV1       ;RESET CURSOR ADVANCE FLAG T       FILE 20
                  ;                            FORCE ANALYSIS OF NEXT           FILE 20
                  ;                            INPUT CHARACTER FOR Z            FILE 20
                  ;                                                             FILE 20
                  ;*****************************************                    FILE 20
                  ; FUNCTION TABLE FOR TERMINAL FUNCTION KEYS *                 FILE 20
                  ;*****************************************                    FILE 20
 1431             FCTAB    EQU   $                                              FILE 20
 1431    4D12              DW    DSEND       ;230 - ENTER KEY                   FILE 20
 1433    B011              DW    BRKDC       ;231 - BREAK KEY                   FILE 20
 1435    1214              DW    DCTOF       ;232 - DISPLAY FUNCTIONS OFF       FILE 20
 1437    6F15              DW    IKEYS       ;233 - I/O CONTROL KEY             FILE 20
 1439    6F15              DW    IKEYS       ;234 - READ KEY                    FILE 20
 143B    6F15              DW    IKEYS       ;235 - RECORD KEY                  FILE 20
 143D    6F15              DW    IKEYS       ;236 - SELECT KEY                  FILE 20
 143F    6F15              DW    IKEYS       ;237 - CONDITION TAPES             FILE 20
 1441    6F15              DW    IKEYS       ;240 - (CONTROL) READ KEY          FILE 20
                  ;                                                             FILE 20
 0098             ETRCD    EQU   230Q        ;ENTER KEY CODE                    FILE 20
 009D             RKYCD    EQU   235Q        ;RECORD KEY CODE                   FILE 20
 009E             SKYCD    EQU   236Q        ;SELECT KEY CODE                   FILE 20
 00A0             CRDKY    EQU   240Q        ;CONTROL READ KEY CODE             FILE 20
 0098             FCLWR    EQU   230Q        ;FUNCTION CODE LOWER LIMIT         FILE 20
 00A1             FCLIM    EQU   241Q        ;FUNCTION CODE UPPER LIMIT         FILE 20
                  ;                                                             FILE 20
 008E             ESCSO    EQU   216Q        ;<ESC>-<SO> CODE                   FILE 20
 00E4             ECLWD    EQU   344Q        ;<ESC>-<LOWER CASE D> CODE         FILE 20
 00F0             FCODE    EQU   360Q        ;F1 CODE                           FILE 20
 00F7             F8COD    EQU   367Q        ;F8 CODE                           FILE 20
 01E0             FTAD1    EQU   FCODE*2     ;FUNCTION CODE ADJUSTMENT          FILE 20
 00DF             FTADJ    EQU   -FTAD1/256*256+FTAD1-1     ;FACTOR             FILE 20
 00FD             SFOR2    EQU   375Q        ;SET FOREIGN MODE STEP 2           FILE 20
 00FE             SFOR1    EQU   376Q        ;SET FOREIGN MODE STEP 1           FILE 20
 00FF             EHNCF    EQU   377Q        ;ENHANCE DISPLAY FUNCTION          FILE 20
                  ;*********************************                            FILE 20
                  ; FUNCTION ADDRESSES FOR I/O KEYS *                           FILE 20
                  ;*********************************                            FILE 20
 1443             IKYTB    EQU   $                                              FILE 20
 1443    0228              DW    ICKEY       ;I/O CONTROL KEY                   FILE 20
 1445    0528              DW    RDKEY       ;READ KEY                          FILE 20
 1447    0B28              DW    RCKEY       ;RECORD KEY                        FILE 20
 1449    0E28              DW    SLKEY       ;SELECT KEY                        FILE 20
 144B    1428              DW    CNDTN       ;CONDITION TAPES                   FILE 20
 144D    0828              DW    CLRED       ;(CONTROL) READ KEY                FILE 20
                  ;                                                             FILE 20
                  ;                                                             FILE 20
                  ;  DISPLAY STRINGS FOR SOFT KEY DISPLAY                       FILE 20
                  ;                                                             FILE 20
 144F             ABLIN    EQU   $                                              FILE 20
 144F    CC201BC1          DB    EOL,ABLNK,ESC,ENDPR                            FILE 20
                  ;                                                             FILE 20
 1453    CCC0              DB    EOL,STPR                                       FILE 20
 1455             AB010    EQU   $                                              FILE 20
 1455    54C8C120          DB    'T',SKYAT,ENDPR,' '                            FILE 20
 1459    80306682          DB    NRMAL,'0',146Q,INVRS,0                         FILE 20
```

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145D   00                                                       FILE 20
0008            ABLOC  EQU  $-AB010-1   ;ATTRIBUTE LOCATION IN BLK   FILE 20
000E            ABLEN  EQU  $-ABLIN-1   ;ATTRIBUTE LINE LENGTH       FILE 20
0002            CRLOC  EQU  2           ;CHARACTER LOCATION IN STRIN FILE 20
                ;                                               FILE 20
                ;*******************************************    FILE 20
                ; FNDTAB - FIND TAB MASK                    *   FILE 20
                ; EXIT: L,H = ADDR OF BYTE CONTAINING TAB BIT * FILE 20
                ;         A = MASK FOR TAB BIT              *   FILE 20
                ;*******************************************    FILE 20
145E            FDTAB  EQU $                                    FILE 20
145E   3AC1FF          LDA  CRCOL    ;GET CURSOR COLUMN         FILE 20
1461   47              MOV B,A       ;SAVE IN B                 FILE 20
1462            FDTB1  EQU $                                    FILE 20
1462   E6F8            ANI 370Q      ;MASK OFF 3 LSB'S          FILE 20
1464   0F              RRC           ;RIGHT-ADJUST MSB'S        FILE 20
1465   0F              RRC                                      FILE 20
1466   0F              RRC                                      FILE 20
1467   C678            ADI HBTBL     ;ADD BASE OF TAB TABLE     FILE 20
1469   6F              MOV L,A       ;SAVE IN L                 FILE 20
146A   78              MOV A,B       ;GET CURSOR COLUMN         FILE 20
146B   E607            ANI 7         ;GET 3 LSB'S               FILE 20
146D   47              MOV B,A       ;SAVE IN B                 FILE 20
146E   04              INR B         ;ADJUST BIT NUMBER         FILE 20
                ;*********************                          FILE 20
                ; FNDTB2 - SET BIT N *                          FILE 20
                ;*********************                          FILE 20
                ;                                               FILE 20
                ;  ENTRY:  B = BIT NUMBER TO BE SET             FILE 20
                ;                                               FILE 20
                ;  EXIT :  A = BYTE WITH BIT N SET              FILE 20
                ;          B = 0                                FILE 20
                ;                                               FILE 20
146F            FDTB2  EQU  $                                   FILE 20
146F   3E80            MVI A,200Q    ;SET BIT 7 OF A            FILE 20
1471            FB100  EQU $                                    FILE 20
1471   07              RLC           ;SHIFT LEFT 1 POSITION     FILE 20
1472   05              DCR B         ;DECREMENT BIT COUNT       FILE 20
1473   C27114          JNZ FB100     ;CONTINUE IF NOT DONE      FILE 20
1476   C9              RET           ;RETURN                    FILE 20
                ;                                               FILE 20
                ;*******************                            FILE 20
                ; EXIT FORMAT MODE *                            FILE 20
                ;*******************                            FILE 20
1477            FRMOF  EQU $                                    FILE 20
1477   3E08            MVI  A,FRMAT   ;SET BIT TO BE CLEARED    FILE 20
1479   32C2FF          STA  POFLD     ;SET PROTECT FLAG FOR UNPROT FILE 20
147C   C31170          JMP  ZLMD1     ;CLEAR FORMAT MODE FLAG   FILE 20
                ;                                               FILE 20
                ;******************************************     FILE 20
                ; FRECNT - CHECK THE NUMBER OF FREE BLOCKS   *  FILE 20
                ;                                            *  FILE 20
                ;          EXIT: Z=F, NOT ENOUGH FREE BLOCKS *  FILE 20
                ;                Z=T, ENOUGH FREE BLOCKS     *  FILE 20
                ;******************************************     FILE 20
147F            FECNT  EQU $                                    FILE 20
147F   CDBB14          CALL FC200                               FILE 20
1482            FC001  EQU  $                                   FILE 20
1482   0614            MVI  B,20      ;SET DESIRED NUMBER OF BLOCK FILE 20
1484   11AAFF          LXI  D,FBLKS-2 ;SET TO FREE LIST HEAD    FILE 20
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1487              FC010  EQU  $                                   FILE 20
1487    EB               XCHG            ;SET H,L TO ADDRESS OF LSB FILE 20
1488    23               INX  H            ;PART OF PREVIOUS LINE   FILE 20
1489    23               INX  H            ;POINTER                 FILE 20
148A    7E               MOV  A,M        ;GET LSB OF NEXT LINE LINK FILE 20
148B    B7               ORA  A          ;ANY MORE FREE BLOCKS?     FILE 20
148C    CAA814           JZ   FC100      ;NO - TRY TO GET MORE      FILE 20
148F    05               DCR  B          ;ENOUGH FREE BLOCKS?       FILE 20
1490    C8               RZ              ;YES - RETURN SUCCESSFUL   FILE 20
1491    CD6A17           CALL CHAIN      ;NO - GET NEXT LINE ADDRESS FILE 20
1494    54               MOV  D,H        ;SAVE NEXT LINE ADDRESS IN FILE 20
1495    5D               MOV  E,L          ;D,E                     FILE 20
1496              FC050  EQU  $                                   FILE 20
1496    E6F0             ANI  360Q       ;COMPUTE ADDRESS OF NEXT   FILE 20
1498    6F               MOV  L,A          ;BLOCK LINK              FILE 20
1499    7E               MOV  A,M        ;GET THE LSB OF THE LINK   FILE 20
149A    2F               CMA  ;A          IS IT AN EOL LINK (LOWER  FILE 20
149B    E60F             ANI  BLKSM        ;FOUR BITS NOT ALL ONES)? FILE 20
149D    C28714           JNZ  FC010      ;NO - GO TO THE NEXT LINE  FILE 20
14A0    05               DCR  B          ;ENOUGH FREE BLOCKS FOUND? FILE 20
14A1    C8               RZ              ;YES - RETURN SUCCESSFUL   FILE 20
14A2    CD6A17           CALL CHAIN      ;NO - GO TO THE NEXT BLOCK FILE 20
14A5    C39614           JMP  FC050      ;CHECK FOR END OF LINE     FILE 20
                  ;****************************************        FILE 20
                  ; NOT ENOUGH FREE BLOCKS - TRY TO GET MORE *       FILE 20
                  ;****************************************        FILE 20
14A8              FC100  EQU  $                                   FILE 20
14A8    3A66FE           LDA  BYFL2      ;CALL                      FILE 20
14AB    E601             ANI  BYFC1      ;FROM FC200 ?              FILE 20
14AD    CAB314           JZ   FC110      ;NO                        FILE 20
14B0    F6FF             ORI  377Q       ;YES RETURN                FILE 20
14B2    C9               RET             ;NZ                        FILE 20
14B3              FC110  EQU  $                                   FILE 20
14B3    CD8E06           CALL PTBLK      ;REMOVE LINE               FILE 20
14B6    C28214           JNZ  FC001      ;LOOP                      FILE 20
14B9    3C               INR  A          ;RET.  NZ                  FILE 20
14BA    C9               RET                                        FILE 20
                  ;                                                 FILE 20
                  ;                                                 FILE 20
14BB              FC200  EQU  $                                   FILE 20
14BB    061E             MVI  B,30       ;# OF BLOCKS               FILE 20
14BD              FCENT  EQU  $                                   FILE 20
14BD    11AAFF           LXI  D,FBLKS-2 ;FREE LIST HEAD            FILE 20
14C0    3E01             MVI  A,BYFC1    ;SET                       FILE 20
14C2    CD4923           CALL SBFL2      ;INDIK.                    FILE 20
14C5    CD8714           CALL FC010      ;ENOUGH FREE/              FILE 20
14C8    C2DE14           JNZ  FC230      ;NO                        FILE 20
14CB    3EFC             MVI  A,-1-BYFC1-BYFC2                      FILE 20
14CD    CD4F23           CALL CBFL2      ;RESET INDIK.              FILE 20
14D0    210000           LXI  H,0                                   FILE 20
14D3    226AFF           SHLD MKFLG                                 FILE 20
14D6    3E04             MVI  A,MMLOK                               FILE 20
14D8    CD1170           CALL ZLMD1                                 FILE 20
14DB    C3F014           JMP  FC290                                 FILE 20
14DE              FC230  EQU  $                                   FILE 20
14DE    3A66FE           LDA  BYFL2                                 FILE 20
14E1    E602             ANI  BYFC2                                 FILE 20
14E3    CCF114           CZ   FC240      ;DISPL. MESSAGE            FILE 20
14E6    3E02             MVI  A,BYFC2    ;SET                       FILE 20
14E8    CD4923           CALL SBFL2      ;INDIK.#1                  FILE 20
```

FILE 20
FILE 20
FILE 20
FILE 20
FILE 20

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                                                                                    FILE 20
8080 MACRO ASSEMBLER, VER 2.4           ERRORS = 0 PAGE 96                          FILE 20
                                                                                    FILE 20
                                                                                    FILE 20
                                                                                    FILE 20
  14EB    3EFE             MVI  A,-1-BYFC1 ;AND RESET                               FILE 20
  14ED    CD4F23           CALL CBFL2     ;INDIK. # 2                               FILE 20
  14F0             FC290   EQU  $                                                   FILE 20
  14F0    C9               RET                                                      FILE 20
  14F1             FC240   EQU  $                                                   FILE 20
  14F1    3E55             MVI  A,UX                                                FILE 20
  14F3    324FFF           STA  ICERR                                               FILE 20
  14F6             FC242   EQU  $                                                   FILE 20
  14F6    CD3A28           CALL BYCHK                                               FILE 20
  14F9    C2F614           JNZ  FC242                                               FILE 20
  14FC             FC244   EQU  $                                                   FILE 20
  14FC    21A20E           LXI  H,YMS03                                             FILE 20
  14FF    37               STC                                                      FILE 20
  1500    22F1FF           SHLD MGPT1                                               FILE 20
  1503    CD5C19           CALL DPMSG                                               FILE 20
  1506             FC246   EQU  $                                                   FILE 20
  1506    CD0570           CALL ZETKY                                               FILE 20
  1509    C20615           JNZ  FC246                                               FILE 20
  150C    FE0D             CPI  CR                                                  FILE 20
  150E    CA1715           JZ   FC247                                               FILE 20
  1511    CD1470           CALL ZBELL                                               FILE 20
  1514    C30615           JMP  FC246                                               FILE 20
  1517             FC247   EQU  $                                                   FILE 20
  1517    CD9019           CALL RTDSP                                               FILE 20
  151A    C9               RET                                                      FILE 20
                   ;                                                                FILE 20
                   ;**********************************************                  FILE 20
                   ; FRNCT1 - FOREIGN MODE CONTROL 1 (<ESC>-"<") *                  FILE 20
                   ;**********************************************                  FILE 20
  151B             FNCT1   EQU  $                                                   FILE 20
  151B    3E0E             MVI  A,FNMD1   ;SET KEYBOARD FOREIGN MODE 1              FILE 20
  151D    C30870           JMP  ZBCTL                                               FILE 20
                   ;**********************************************                  FILE 20
                   ; FRNCT2 - FOREIGN MODE CONTROL 2 (<ESC>-">") *                  FILE 20
                   ;**********************************************                  FILE 20
  1520             FNCT2   EQU  $                                                   FILE 20
  1520    3E0F             MVI  A,FNMD2   ;SET KEYBOARD FOREIGN MODE 2              FILE 20
  1522    C30870           JMP  ZBCTL                                               FILE 20
                   ;                                                                FILE 20
                   ;                                                                FILE 20
                   ; * * * * * * * * * * * * * * * * * * * * * * * *                FILE 20
                   ;                                                                FILE 20
                   ;  GTFCTK - GET FUNCTION KEY                                     FILE 20
                   ;                                                                FILE 20
                   ;      ENTRY:  DON'T CARE                                        FILE 20
                   ;                                                                FILE 20
                   ;      EXIT :  NZ - FUNCTION KEY CHAR AVAILABLE                  FILE 20
                   ;                A = C = FUNCTION KEY CHARACTER                  FILE 20
                   ;              Z - NO FUNCTION KEY CHAR AVAILABLE                FILE 20
                   ;                DFLGS(FCTK2D) = 0                               FILE 20
                   ;                A DESTROYED                                     FILE 20
                   ;              D-L DESTROYED                                     FILE 20
                   ;                                                                FILE 20
  1525             GFCTK   EQU  $                                                   FILE 20
  1525    2AA4FF           LHLD CRFKY        ;GET LAST FUNCTION KEY                 FILE 20
                   ;                           CHARACTER ADDRESS                    FILE 20
  1528    CDBA0B           CALL NTCH0        ;GET THE NEXT CHARACTER                FILE 20
  152B    C23615           JNZ  GF010        ;EOL LINK - DO EOL EXIT                FILE 20
  152E    EB               XCHG                                                     FILE 20
  152F    22A4FF           SHLD CRFKY        ;STORE NEW ADDRESS                     FILE 20
```

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                                                                                  FILE 20
                                                                                  FILE 20
                                                                                  FILE 20
                                                                                  FILE 20
                                                                                  FILE 20
1532   FE80          CPI  ADEL+1    ;IS CHARACTER ASCII?                          FILE 20
1534   4F            MOV  C,A         ;(PUT DATA IN C-REGISTER)                   FILE 20
1535   F8            RM             ;YES - RETURN                                 FILE 20
              ;                                                                   FILE 20
              ;  EOL FOUND - CLEAR FCTK2D FLAG                                    FILE 20
              ;                                                                   FILE 20
1536          GF010  EQU  $                                                       FILE 20
1536   3EEF          MVI  A,377Q-FTK2D                                            FILE 20
1538   CDE015        CALL CRDFL     ;CLEAR FLAG FROM FLAG WORD                    FILE 20
153B   BF            CMP  A         ;SET Z TRUE                                   FILE 20
153C   C9            RET            ;RETURN                                       FILE 20
              ;                                                                   FILE 20
              ;***************************                                        FILE 20
              ; HTBSET - TAB SET ROUTINE *                                        FILE 20
              ;***************************                                        FILE 20
153D          HBSET  EQU $                                                        FILE 20
153D   CD5E14        CALL FDTAB     ;GET TABLE ENTRY FOR COLUMN                   FILE 20
1540   B6            ORA M          ;SET TAB                                      FILE 20
1541   77            MOV M,A                                                      FILE 20
1542   C9            RET            ;RETURN                                       FILE 20
              ;*****************************                                      FILE 20
              ; HTBCLR - TAB CLEAR ROUTINE *                                      FILE 20
              ;*****************************                                      FILE 20
1543          HBCLR  EQU $                                                        FILE 20
1543   CD5E14        CALL FDTAB     ;GET TABLE ENTRY FOR COLUMN                   FILE 20
1546   EEFF          XRI 377Q       ;COMPLEMENT MASK                              FILE 20
1548   A6            ANA M          ;CLEAR TAB                                    FILE 20
1549   77            MOV M,A                                                      FILE 20
154A   C9            RET            ;RETURN                                       FILE 20
              ;                                                                   FILE 20
              ;*******************************************                        FILE 20
              ; IOBNGO - FAST BINARY READ ESCAPE SEQUENCE *                       FILE 20
              ;*******************************************                        FILE 20
154B          IBNGO  EQU  $                                                       FILE 20
154B   212C28        LXI  H,CDCDP   ;EXECUTE FAST BINARY READ                     FILE 20
154E   C37615        JMP  IRMGO       ;IF I/O ROM PRESENT                         FILE 20
              ;*****************************                                      FILE 20
              ; IOBSYC - WAIT FOR CTU IDLE *                                      FILE 20
              ;*****************************                                      FILE 20
1551          IBSYC  EQU  $                                                       FILE 20
1551   213A28        LXI  H,BYCHK   ;GO TO CTU BUSY CHECK                         FILE 20
1554   CD7615        CALL IRMGO       ;ROUTINE                                    FILE 20
1557   3A55FF        LDA  CMND      ;GET CURRENT CTU COMMAND                      FILE 20
155A   E601          ANI  RUN       ;TAPE STILL RUNNING?                          FILE 20
155C   C8            RZ             ;NO - RETURN                                  FILE 20
155D   324FFF        STA  ICERR     ;YES - CLEAR "IOCERR"                         FILE 20
1560   C35115        JMP  IBSYC     ;CONTINUE WAITING                             FILE 20
              ;****************************************                           FILE 20
              ; IOCTGO - I/O CONTROL ESCAPE SEQUENCE *                            FILE 20
              ;****************************************                           FILE 20
1563          ICTGO  EQU  $                                                       FILE 20
1563   211A28        LXI  H,ICNTL   ;EXECUTE I/O CONTROL ESCAPE                   FILE 20
1566   C37615        JMP  IRMGO       ;SEQ IF I/O ROM PRESENT                     FILE 20
              ;**********************************                                 FILE 20
              ; IOCTMN - MONITOR CARTRIDGE TAPES *                                FILE 20
              ;**********************************                                 FILE 20
1569          ICTMN  EQU  $                                                       FILE 20
1569   212F28        LXI  H,CTMON   ;GET MONITOR ADDRESS                          FILE 20
156C   C37615        JMP  IRMGO     ;EXECUTE IF CODE PRESENT                      FILE 20
              ;**********************                                             FILE 20
```

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                                                                      FILE 20
                                                                      FILE 20
                                                                      FILE 20
                                                                      FILE 20
                                                                      FILE 20
                  ; IOKEYS - I/O KEY HIT *                            FILE 20
                  ;***********************                            FILE 20
                  ;                                                   FILE 20
                  ;  ENTRY:  D,E = KEY INDEX                          FILE 20
                  ;                                                   FILE 20
 156F             IKEYS  EQU  $                                       FILE 20
 156F   213D14           LXI  H,IKYTB-6                               FILE 20
 1572   19               DAD  D          ;COMPUTE KEY FUNCTION ADDRES FILE 20
 1573   CD6A17           CALL CHAIN      ;EXECUTE KEY FUNCTION IF I/O FILE 20
                  ;                        ROM PRESENT                FILE 20
                  ;                                                   FILE 20
                  ;****************************************           FILE 20
                  ; IORMGO - PERFORM FUNCTION IF OPTION ROMS *        FILE 20
                  ;   ARE PRESENT                          *          FILE 20
                  ;****************************************           FILE 20
                  ;                                                   FILE 20
                  ;  ENTRY:  H,L = VECTOR TO BE ENTERED               FILE 20
                  ;                                                   FILE 20
                  ;  EXIT :  NC - FUNCTION EXECUTED                   FILE 20
                  ;            REGISTERS SET ACCORDING TO FUNCTION    FILE 20
                  ;          C - FUNCTION NOT EXECUTED                FILE 20
                  ;            A DESTROYED                            FILE 20
                  ;                                                   FILE 20
 1576             IRMGO  EQU  $                                       FILE 20
 1576   E5               PUSH H          ;PUT FUNCTION ADDR ON STACK  FILE 20
 1577   2E00             MVI  L,0        ;CHECK ROM START LOCATION    FILE 20
 1579   CD8615           CALL IRMG1      ;DOES ROM EXIST?             FILE 20
 157C   C8               RZ              ;YES - EXECUTE FUNCTION      FILE 20
 157D   21910E           LXI  H,NDRVR    ;NO - SET ERROR MESSAGE TO   FILE 20
 1580   22F1FF           SHLD MGPT1        ;"NO DEVICE DRIVER"        FILE 20
 1583   E1               POP  H          ;RESTORE STACK               FILE 20
 1584   37               STC             ;RETURN FUNCTION NOT         FILE 20
 1585   C9               RET               ;EXECUTED (C-TRUE)         FILE 20
                  ;*****************************************          FILE 20
                  ; IORMG1 - CHECK FOR PRESENCE OF OPTION ROM *         FILE 20
                  ;*****************************************          FILE 20
                  ;                                                   FILE 20
                  ;  ENTRY:  H,L = ROM STARTING ADDRESS               FILE 20
                  ;                                                   FILE 20
                  ;  EXIT :  Z => ROM EXIST                           FILE 20
                  ;            H,L = H,L(ENTRY)+1                     FILE 20
                  ;          NZ => ROM ABSENT                         FILE 20
                  ;          A DESTROYED                              FILE 20
                  ;            H,L = H,L(ENTRY) => ROM ABSENT         FILE 20
                  ;            H,L = H,L(ENTRY)+1 => WRONG ROM        FILE 20
                  ;                                                   FILE 20
 1586             IRMG1  EQU  $                                       FILE 20
 1586   7E               MOV  A,M        ;GET FIRST ROM BYTE          FILE 20
 1587   E6F0             ANI  360Q       ;CHECK UPPER 4 BITS ONLY     FILE 20
 1589   FE50             CPI  PX         ;IS IT AN UPPER CASE P?      FILE 20
 158B   C0               RNZ             ;NO - RETURN ROM ABSENT      FILE 20
 158C   23               INX  H          ;YES - CHECK SECOND BYTE     FILE 20
 158D   7E               MOV  A,M        ;SECOND BYTE OF ROM SHOULD   FILE 20
 158E   BC               CMP  H            ;EQUAL HIGH ORDER EIGHT    FILE 20
 158F   C9               RET               ;BITS IN ITS PROPER ADDRES FILE 20
                  ;                        RANGE                      FILE 20
                  ;                                                   FILE 20
                  ;**********************************                 FILE 20
                  ; IOINTR - I/O INTERRUPT PROCESSING *                FILE 20
                  ;**********************************                 FILE 20
```

```
                         ;
                         ;  ENTRY:  "PSW" AND H,L PUSHED
                         ;          A = INTERRUPT CODE
                         ;
1590                     IINTR  EQU  $
1590    CD6591                  CALL ITVEC      ;CHECK ALTERNATE INTERRUPT
1593    3AF5FF                  LDA  PCCTL      ;GET CURRENT PROCESSOR STATE
1596    F640                    ORI  POLL       ;POLL THE I/O BOARDS TO FIND
1598    D370                    OUT  POCSR        ;OUT WHO INTERRUPTED
159A    210780                  LXI  H,ICRCL    ;DO DUMMY I/O READ TO GET
159D    6E                      MOV  L,M          ;POLL RESPONSE
159E    E6BF                    ANI  377Q-POLL
15A0    D370                    OUT  POCSR      ;RESTORE PROCESSOR STATE
15A2    3A7FFE                  LDA  DVFLG      ;GET POLL DEVICE FLAG
15A5    A5                      ANA  L          ;DEVICE DRIVER PRESENT?
15A6    FA3D28                  JM   CINTR      ;CTU - DO CTU ROUTINE
                         ;*******************************************
                         ; INVALID DEVICE INTERRUPT - REPORT ERROR *
                         ;*******************************************
15A9    7D                      MOV  A,L        ;RECALL POLL RESPONSE
15AA    0640                    MVI  B,ASIGN    ;COMPUTE ERROR CODE
15AC    B7                      ORA  A          ;ANY DEVICE INTERRUPTED?
15AD    CAB515                  JZ   I0020      ;NO - DON'T LOOK FOR BIT
                         ;                      YES - DETERMINE DEVICE
15B0                     I0010  EQU  $
15B0    04                      INR  B          ;INCREMENT ERROR CODE
15B1    07                      RLC             ;DEVICE TYPE FOUND?
15B2    D2B015                  JNC  I0010      ;NO - CONTINUE LOOKING
15B5                     I0020  EQU  $          ;YES - SET ERROR CODE
15B5    78                      MOV  A,B
                         ;                      FALL INTO ERROR REPORTER
                         ;
                         ;*********************************************
                         ; INTERR - REPORT INVALID INTERRUPT OCCURRED *
                         ;*********************************************
                         ;
                         ;  ENTRY:  A = ERROR CODE (ASCII CHARACTER)
                         ;
15B6                     ITERR  EQU  $
15B6    21DEFF                  LXI  H,IDATA    ;SET ERROR CODE FOR ERROR
15B9    22EFFF                  SHLD MGPT2        ;MESSAGE
15BC    77                      MOV  M,A
15BD    23                      INX  H
15BE    36CE                    MVI  M,EOP
15C0    21770E                  LXI  H,IERMS    ;REPORT INTERRUPT ERROR
15C3    AF                      XRA  A          ;STOP ANY CTU MOTION
15C4    320B80                  STA  ICTCO
15C7    C3C911                  JMP  HNGU0        ;AND HANG TERMINAL
                         ;******************************************
                         ; INTRPT - PROCESS UNEXPECTED INTERRUPTS *
                         ;******************************************
                         ;
                         ;  ENTRY:  "PSW" PUSHED
                         ;          A = INTERRUPT CODE
                         ;          C-FLAG CLEARED
                         ;
15CA                     ITRPT  EQU  $
15CA    CD6591                  CALL ITVEC      ;ANY INTERRUPT HANDLER?
15CD    D2B615                  JNC  ITERR      ;NO - REPORT ERROR
15D0    F1                      POP  PSW        ;YES - RESTORE PSW
```

FILE 20 (printed in the right column beside every line)

```
                                                                FILE 20
                                                                FILE 20
                                                                FILE 20
                                                                FILE 20
 15D1   FB              EI              ;RE-ENABLE INTERRUPTS   FILE 20
 15D2   C9              RET             ;RETURN TO INTERRUPTED CODE FILE 20
                ;                                               FILE 20
                ;***********************************            FILE 20
                ; IOINTR - I/O INTERRUPT PROCESSING *           FILE 20
                ;***********************************            FILE 20
                ;*****************                              FILE 20
                ; KEYBOARD ENABLE *                             FILE 20
                ;*****************                              FILE 20
 15D3           KBEN    EQU $                                   FILE 20
 15D3   3A6EFF          LDA  DFLGS                              FILE 20
 15D6   E640            ANI KDLOK      ;KEYBOARD LOCKED BY ESC SEQ? FILE 20
 15D8   C0              RNZ            ;YES - DO NOT UNLOCK KEYBOARD FILE 20
                ;                                               FILE 20
 15D9           KBEN1   EQU $                                   FILE 20
 15D9   3E02            MVI  A,ULKKB   ;UNLOCK THE KEYBOARD     FILE 20
 15DB   CD0870          CALL ZBCTL                              FILE 20
 15DE   3EBF            MVI  A,377Q-KDLOK   ;CLEAR LOCKED FLAG  FILE 20
                ;                                               FILE 20
                ;  CLRDFL - CLEAR DATA TRANSFER FLAGS           FILE 20
                ;                                               FILE 20
                ;       ENTRY:  A = FLAGS TO BE CLEARED         FILE 20
                ;                                               FILE 20
 15E0           CRDFL   EQU  $                                  FILE 20
 15E0   216EFF          LXI  H,DFLGS                            FILE 20
 15E3   A6              ANA  M         ;MASK OUT FLAGS          FILE 20
                ;                                               FILE 20
                ;  STOREA - STORE VALUE N A-REG AND RETURN      FILE 20
                ;                                               FILE 20
                ;       ENTRY:  A = VALUE TO BE STORED          FILE 20
                ;               H,L = LOCATION TO BE STORED IN  FILE 20
                ;                                               FILE 20
 15E4           SOREA   EQU $                                   FILE 20
 15E4   77              MOV M,A        ;STORE UPDATED VALUE     FILE 20
 15E5   C9              RET            ;RETURN                  FILE 20
                ;***************                                FILE 20
                ; KEYBOARD LOCK *                               FILE 20
                ;***************                                FILE 20
 15E6           KLOKO   EQU $                                   FILE 20
 15E6   3E40            MVI  A,KDLOK   ;SET ESCAPE SEQUENCE LOCK FILE 20
 15E8   CD6D16          CALL STDFL        ;FLAG                 FILE 20
                ;                                               FILE 20
 15EB           KBLOK   EQU $                                   FILE 20
 15EB   3E01            MVI  A,LCKKB   ;LOCK THE KEYBOARD       FILE 20
 15ED   C30870          JMP  ZBCTL                              FILE 20
                ;                                               FILE 20
                ;***************                                FILE 20
                ; START PROTECT *                               FILE 20
                ;***************                                FILE 20
 15F0           PSTRT   EQU $                                   FILE 20
 15F0   06C0            MVI  B,STPR    ;STORE START PROTECT CONTROL FILE 20
 15F2   C31516          JMP  P0100        ;FLAG                 FILE 20
                ;***************                                FILE 20
                ; TRANSMIT-ONLY *                               FILE 20
                ;***************                                FILE 20
 15F5           SRXMO   EQU  $                                  FILE 20
 15F5   3EC2            MVI  A,XONLY   ;STORE TRANSMIT-ONLY CONTROL FILE 20
 15F7   C3FC15          JMP  P0010        ;FLAG                 FILE 20
                ;*************                                  FILE 20
                ; END PROTECT *                                 FILE 20
```

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                                                                                     FILE 20
8080 MACRO ASSEMBLER, VER 2.4            ERRORS = 0 PAGE 101                         FILE 20
                                                                                     FILE 20
                                                                                     FILE 20
                                                                                     FILE 20
                       ;**************                                               FILE 20
 15FA                  PREND   EQU $                                                 FILE 20
 15FA     3EC1                 MVI  A,ENDPR   ;STORE END PROTECT CONTROL             FILE 20
                       ;                                                             FILE 20
                       ;  MAKE SURE PREVIOUS CHAR IS DEFINED PROTECTED               FILE 20
                       ;                                                             FILE 20
 15FC                  P0010   EQU  $                                                FILE 20
 15FC     32DBFF               STA  PARM1     ;SAVE CONTROL FLAG                     FILE 20
 15FF     3AC1FF               LDA  CRCOL     ;GET THE CURRENT COLUMN                FILE 20
 1602     3D                   DCR  A         ;SET TO FIND PREVIOUS COLUMN           FILE 20
 1603     CD6C07               CALL RADRO     ;PREVIOUS COLUMN PRESENT?              FILE 20
 1606     FA1470               JM   ZBELL     ;NO - SOUND BELL AND RETURN            FILE 20
 1609     3AC5FF               LDA  LTFMT     ;YES - RECALL LAST FORMAT CT           FILE 20
 160C     FEC0                 CPI  STPR      ;WAS IT A START PROTECT?               FILE 20
 160E     C4F015               CNZ  PSTRT     ;NO - ENTER STPR                       FILE 20
 1611     3ADBFF               LDA  PARM1     ;RECALL FORMAT CONTROL FLAG            FILE 20
 1614     47                   MOV  B,A         ;TO BE STORED                        FILE 20
                       ;                                                             FILE 20
                       ;  ENTER THE FORMAT CONTROL FLAG                              FILE 20
                       ;                                                             FILE 20
 1615                  P0100   EQU $                                                 FILE 20
 1615     CD7317               CALL CKFMS     ;FORMAT MODE?                          FILE 20
 1618     C0                   RNZ            ;YES - TERMINATE                       FILE 20
 1619     78                   MOV  A,B         ;NO - ADD CHAR TO DISPLAY            FILE 20
 161A     F5                   PUSH PSW       ;SAVE THE CONTROL CODE                 FILE 20
 161B     CD921E               CALL DSPC1       ;(DISPC1 DESTROYS "LSTFMT"           FILE 20
 161E     F1                   POP  PSW       ;RECALL CONTROL CODE                   FILE 20
 161F     32C5FF               STA  LTFMT       ;NEW ENTRY                           FILE 20
 1622     C9                   RET                                                   FILE 20
                       ;                                                             FILE 20
                       ;                                                             FILE 20
                       ;  ENTREN - ENABLE ENTER VIA ESCAPE SEQUENCE                  FILE 20
                       ;                                                             FILE 20
 1623                  ETREN   EQU  $                                                FILE 20
 1623     010040               LXI  B,SNTER   ;SET DISPLAY SEND PENDING              FILE 20
                       ;                       FALL INTO "SBLXFO"                    FILE 20
                       ;*****************************************                    FILE 20
                       ; SBLXFO - SET BLOCK TRANSFER FLAG FOR ESCAPE *               FILE 20
                       ;   SEQUENCE INITIATED BLOCK TRANSFERS        *               FILE 20
                       ;*****************************************                    FILE 20
                       ;                                                             FILE 20
                       ;  ENTRY:  B = FLAG TO BE SET IN "MFLGS"                      FILE 20
                       ;          C = FLAG TO BE SET IN "MFLGS2"                     FILE 20
                       ;                                                             FILE 20
                       ;  EXIT :  ALL REGISTERS DESTROYED                            FILE 20
                       ;          X-ON AND DC2 PENDING FLAGS ARE SET                 FILE 20
                       ;          ACCORDING TO THE SETTINGS OF G AND H               FILE 20
                       ;                                                             FILE 20
 1626                  SLXFO   EQU  $                                                FILE 20
 1626     CDFD0F               CALL CRXON     ;CLEAR BLOCK TRANSFER TRIGGE           FILE 20
                       ;                                                             FILE 20
                       ;  SBLXFA - DETERMINE DC2 HANDSHAKE MODE FOR                  FILE 20
                       ;    NON-BLOCK MODE KEYBOARD INITIATED BLOCK                  FILE 20
                       ;    TRANSFERS                                                FILE 20
                       ;                                                             FILE 20
 1629                  SLXFA   EQU $                                                 FILE 20
 1629     3AFBFF               LDA  KJMPR     ;GET THE STRAP SETTINGS                FILE 20
 162C     E640                 ANI HDSHK      ;DC2 ON ALL BLOCK TRANSFERS?           FILE 20
 162E     CA3E16               JZ   SL010     ;NO - DO NOT SET DC2 FLAG              FILE 20
                       ;                       YES - FALL INTO "SBLXF1"              FILE 20
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                                                                      FILE 20
                                                                      FILE 20
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                                                                      FILE 20
                                                                      FILE 20
                   ;                                                  FILE 20
                   ;***********************************************   FILE 20
                   ; SBLXF1 - SET BLOCK TRANSFER FLAG FOR KEYBOARD *  FILE 20
                   ;   INITIATED BLOCK TRANSFERS                   *  FILE 20
                   ;***********************************************   FILE 20
                   ;                                                  FILE 20
                   ;  ENTRY:  B = FLAG TO BE SET IN "MFLGS"           FILE 20
                   ;          C = FLAG TO BE SET IN "MFLGS2"          FILE 20
                   ;                                                  FILE 20
 1631              SLXF1  EQU  $                                      FILE 20
 1631   3AFBFF            LDA  KJMPR      ;GET THE STRAP SETTINGS     FILE 20
 1634   E680              ANI  D2SND      ;INHIBIT DC2 HANDSHAKE?     FILE 20
 1636   3E01              MVI  A,SDC2/256  ;(SET DC2 PENDING FLAG)    FILE 20
 1638   CA3F16            JZ   SL020      ;NO - SET DC2 PENDING FLAG  FILE 20
 163B   CD9804            CALL CKCT1      ;YES - SET BLOCK TRANSFER   FILE 20
                   ;                        TRIGGER TO CAUSE IMMEDIATE FILE 20
                   ;                        TRANSMISSION OF DATA      FILE 20
 163E              SL010  EQU $                                       FILE 20
 163E   78                MOV A,B         ;PUT FLAG INTO A-REGISTER   FILE 20
 163F              SL020  EQU  $                                      FILE 20
 163F   B0                ORA  B          ;ADD IN OPTIONAL DC2 FLAG   FILE 20
 1640   47                MOV  B,A        ;SAVE FLAGS IN B-REGISTER   FILE 20
 1641   CDDF0F            CALL CRMTE      ;REMOTE MODE ENABLED?       FILE 20
 1644   C8                RZ              ;NO - DON'T SET BLOCK XFR   FILE 20
 1645   2170FF            LXI  H,MFLGS    ;YES - SET DATA PENDING     FILE 20
 1648   78                MOV  A,B          ;FLAGS                    FILE 20
 1649   B6                ORA  M                                      FILE 20
 164A   77                MOV  M,A                                    FILE 20
 164B   2B                DCX  H                                      FILE 20
 164C   79                MOV  A,C                                    FILE 20
 164D   B6                ORA  M          ;SET FLAG IN "MFLGS2"       FILE 20
 164E   77                MOV  M,A                                    FILE 20
 164F   C3EB15            JMP  KBLOK      ;DISABLE THE KEYBOARD       FILE 20
                   ;                                                  FILE 20
                   ;*************************************             FILE 20
                   ; SDTRM1 - SEND TERMINATOR CHARACTER *             FILE 20
                   ;*************************************             FILE 20
                   ;                                                  FILE 20
                   ;  EXIT :  A DESTROYED                             FILE 20
                   ;                                                  FILE 20
 1652              STRM1  EQU  $                                      FILE 20
 1652   CDCE0F            CALL GMODE      ;PAGE MODE?                 FILE 20
 1655   3A0478            LDA  BKTRM        ;(GET BLOCK TERMINATOR)   FILE 20
 1658   C20817            JNZ  XUTDC      ;YES - SEND BLOCK TERM ONLY FILE 20
 165B              STRM2  EQU  $          ;NO - SEND CR(LF)           FILE 20
 165B   3E0D              MVI  A,CR                                   FILE 20
 165D   CD0817            CALL XUTDC      ;TRANSMIT RETURN            FILE 20
 1660   3AF3FF            LDA  MFLG2                                  FILE 20
 1663   E604              ANI  ATOLF      ;AUTO LINE FEED ENABLED?    FILE 20
 1665   C8                RZ              ;NO - RETURN                FILE 20
 1666              STRM3  EQU  $                                      FILE 20
 1666   3E0A              MVI  A,LF       ;YES - TRANSMIT LINE FEED   FILE 20
 1668   C30817            JMP  XUTDC                                  FILE 20
                   ;                                                  FILE 20
                   ;*********************************                 FILE 20
                   ; SETDFL - SET DATA TRANSFER FLAG *                FILE 20
                   ;*********************************                 FILE 20
                   ;                                                  FILE 20
                   ;  ENTRY:  A = FLAG BIT TO BE SET                  FILE 20
                   ;                                                  FILE 20
```

```
                                                                          FILE 20
                                                                          FILE 20
                                                                          FILE 20
                                                                          FILE 20
                                                                          FILE 20
                  ;  EXIT :  H = BASEH                                    FILE 20
                  ;          A,L DESTROYED                                FILE 20
                  ;                                                       FILE 20
1668              STDFO  EQU  $              ;SET DATA COMM INPUT FLAG    FILE 20
166B  3E01               MVI  A,SACOM        ;SET FLAG BIT TO BE SET      FILE 20
166D              STDFL  EQU  $                                           FILE 20
166D  216EFF             LXI  H,DFLGS                                     FILE 20
1670  B6                 ORA  M              ;MERGE FLAG BIT TO EXISTING  FILE 20
1671  77                 MOV  M,A              ;FLAGS                     FILE 20
1672  C9                 RET                 ;RETURN                      FILE 20
                  ;                                                       FILE 20
                  ;                                                       FILE 20
                  ; * * * * * * * * * * * * * * * * * * * * * * * * *     FILE 20
                  ;                                                       FILE 20
                  ;  SETLFT,SETRHT - SET LEFT AND RIGHT MARGINS           FILE 20
                  ;                                                       FILE 20
                  ;      ENTRY:  H = BASEH                                FILE 20
                  ;              CURCOL = CURSOR COLUMN POSITION          FILE 20
                  ;                                                       FILE 20
                  ;      EXIT :  LFTMGN,RHTMGN SET APPROPRIATELY          FILE 20
                  ;                                                       FILE 20
1673              STLFT  EQU  $                                           FILE 20
1673  CD7817             CALL CKFMT          ;FORMAT MODE?                FILE 20
1676  C0                 RNZ                 ;YES - DON'T SET MARGIN      FILE 20
1677  3ABEFF             LDA  RTMGN          ;NO - GET THE RIGHT MARGIN   FILE 20
167A  2EC1               MVI  L,CRCOL-BASE                                FILE 20
167C  BE                 CMP  M              ;CURSOR AFTER RIGHT MARGIN?  FILE 20
167D  FA8E20             JM   DPCH1          ;YES - DON'T SET MARGIN      FILE 20
1680  7E                 MOV  A,M            ;NO - SET NEW LEFT MARGIN    FILE 20
1681  32BFFF             STA  LTMGN                                       FILE 20
1684  C9                 RET                 ;RETURN                      FILE 20
                  ;                                                       FILE 20
1685              STRHT  EQU  $                                           FILE 20
1685  CD7817             CALL CKFMT          ;FORMAT MODE?                FILE 20
1688  C0                 RNZ                 ;YES - DON' SET MARGIN       FILE 20
1689  3AC1FF             LDA  CRCOL          ;GET CURRENT CURSOR COLUMN   FILE 20
168C  2EBF               MVI  L,LTMGN-BASE                                FILE 20
168E  BE                 CMP  M              ;BEFORE LEFT MARGIN?         FILE 20
168F  FA8E20             JM   DPCH1          ;YES - DON'T SET MARGIN      FILE 20
1692  2B                 DCX  H              ;NO - SET NEW RIGHT MARGIN   FILE 20
1693  77                 MOV  M,A                                         FILE 20
1694  C9                 RET                 ;RETURN                      FILE 20
                  ;                                                       FILE 20
                  ;*********************************                      FILE 20
                  ; SETMF2 - SET FLAG BIT IN MFLGS2 *                     FILE 20
                  ;*********************************                      FILE 20
                  ;                                                       FILE 20
                  ;  ENTRY:  A = FLAG BIT TO BE SET                       FILE 20
                  ;                                                       FILE 20
                  ;  EXIT :  A = UPDATED MFLGS2 VALUE                     FILE 20
                  ;          H,L = MFLGS2                                 FILE 20
                  ;                                                       FILE 20
1695              STMF2  EQU  $                                           FILE 20
1695  216FFF             LXI  H,MLGS2                                     FILE 20
1698  B6                 ORA  M              ;ADD BIT TO MFLGS2           FILE 20
1699  77                 MOV  M,A            ;STORE NEW SETTINGS          FILE 20
169A  C9                 RET                 ;RETURN                      FILE 20
                  ;                                                       FILE 20
                  ;****************************************               FILE 20
                  ; SETTRM - SET NON-DISPLAYING TERMINATOR *              FILE 20
```

```
                                                                  FILE 20
                                                                  FILE 20
                                                                  FILE 20
                                                                  FILE 20
                                                                  FILE 20
                                                                  FILE 20
                  ;****************************************       FILE 20
 169B             STTRM  EQU  $                                   FILE 20
 169B   3E01             MVI  A,INTRM   ;SET TO IGNORE NON-DISPLAYIN FILE 20
 169D   326DFF           STA  TMFCT       ;TERMINATORS            FILE 20
 16A0   3EC4             MVI  A,SPFLG   ;ADD NON-DISPLAYING       FILE 20
 16A2   CD941E           CALL DSPC2       ;TERMINATOR TO DISPLAY  FILE 20
 16A5   C3A21A           JMP  FDSRX     ;SET "LSTCOL" TO MAXCOL+1 FILE 20
                  ;                       TO FORCE LINE RE-SCAN TO FILE 20
                  ;                       INHIBIT DELETION OF NEW FILE 20
                  ;                       NON-DISPLAYING TERMINATOR FILE 20
                  ;                                               FILE 20
                  ;**************************************         FILE 20
                  ; SNDCDE - SEND ATTENTION/FUNCTION CODE *       FILE 20
                  ;**************************************         FILE 20
 16A8             SDCDE  EQU  $                                   FILE 20
 16A8   3A6EFF           LDA  DFLGS     ;GET DATA TRANSFER FLAGS  FILE 20
 16AB   E601             ANI  SACOM     ;COMMAND FROM DATA COMM?  FILE 20
 16AD   C0               RNZ            ;YES - IGNORE IT          FILE 20
 16AE   21EB24           LXI  H,SDCTB   ;SET TO ACCUMULATE OCTAL  FILE 20
 16B1   3E08             MVI  A,OTRDX     ;CODE CHARACTER         FILE 20
 16B3   C3F504           JMP  ECAPO                               FILE 20
                  ;****************************                   FILE 20
                  ; <A> - SEND ATTENTION CODE *                   FILE 20
                  ;****************************                   FILE 20
 16B6             SDCD1  EQU  $                                   FILE 20
 16B6   3ADEFF           LDA  IDATA     ;GET ACCUMULATED VALUE    FILE 20
 16B9   47               MOV  B,A       ;PUT CODE INTO B-REGISTER FILE 20
 16BA   3E0B             MVI  A,SDATN   ;SET DATA COMM CONTROL CODE FILE 20
 16BC   C3B711           JMP  DMCTL     ;PERFORM FUNCTION         FILE 20
                  ;                                               FILE 20
                  ;********************************************   FILE 20
                  ; STRTBL - SET FIRST DISPLAY OUT CHARACTER FOR * FILE 20
                  ;   BLOCK STORE                              *  FILE 20
                  ;********************************************   FILE 20
                  ;                                               FILE 20
                  ;  ENTRY:  DON'T CARE                           FILE 20
                  ;                                               FILE 20
                  ;  EXIT :  CURCOL,CURROW = STARTING POSITION    FILE 20
                  ;                                               FILE 20
                  ;  IF THE AUTO TERMINATOR STRAP (J) IS OUT, A   FILE 20
                  ;  TERMINATOR IS PLACED AHEAD OF THE CURRENT    FILE 20
                  ;  CURSOR POSITION AND A REVERSE SCAN IS MADE   FILE 20
                  ;  FOR THE FIRST TERMINATOR BEFORE THE CURRENT  FILE 20
                  ;  CURSOR POSITION.  OTHERWISE, THE CURSOR IS   FILE 20
                  ;  PLACED AT THE HOME POSITION                  FILE 20
                  ;                                               FILE 20
 16BF             SRTBL  EQU  $                                   FILE 20
 16BF   CDC516           CALL SRTB1     ;SET CURSOR START POSITION FILE 20
 16C2   C3D922           JMP  IITDG     ;SET UP DISPLAY GET ROUTINE FILE 20
                  ;                                               FILE 20
 16C5             SRTB1  EQU  $                                   FILE 20
 16C5   3AFAFF           LDA  KJMP2     ;GET KEYBOARD JUMPERS 2   FILE 20
 16C8   E601             ANI  ATTRM     ;AUTO TERMINATOR ENABLED? FILE 20
 16CA   CA3B17           JZ   XOHME     ;NO - HOME THE CURSOR     FILE 20
                  ;*******************************                FILE 20
                  ; STTERM - SET AUTO TERMINATOR *                FILE 20
                  ;*******************************                FILE 20
                  ;                                               FILE 20
                  ;  EXIT :  Z => AUTO TERMINATOR NOT SET         FILE 20
                  ;          NZ => AUTO TERMINATOR SET            FILE 20
```

```
                      ;                                                FILE 20
16CD                  SATRM   EQU  $                                   FILE 20
16CD      CD7E17              CALL CKMLK      ;MEMORY LOCK ENABLED?    FILE 20
16D0      CAD916              JZ   SB010      ;YES - CHECK FOR FREE BLOCKS FILE 20
16D3      CD7817              CALL CKFMT      ;FORMAT MODE ENABLED?    FILE 20
16D6      CAE016              JZ   SB050      ;NO - ADD TERMINATOR     FILE 20
16D9                  SB010   EQU  $          ;YES - CHECK FOR FREE BLOCKS FILE 20
16D9      3AACFF              LDA  FBLKS      ;GET LSB OF FREE BLOCKS PTR FILE 20
16DC      B7                  ORA  A          ;ANY FREE BLOCKS?        FILE 20
16DD      CA630B              JZ   MLOCK      ;NO - FORCE MEMORY LOCK ON FILE 20
                      ;                                                FILE 20
                      ;****************************************        FILE 20
                      ; SPACE AVAILABLE - STORE NON-DISPLAYING  *      FILE 20
                      ;   TERMINATOR AT CURRENT CURSOR POSITION *      FILE 20
                      ;****************************************        FILE 20
16E0                  SB050   EQU  $                                   FILE 20
16E0                  SB060   EQU  $                                   FILE 20
16E0      3EFB                MVI  A,377Q-NSEND                        FILE 20
16E2      CDE015              CALL CRDFL      ;CLEAR NO DATA FLAG      FILE 20
16E5      F608                ORI  SPTRM      ;SET TO SKIP INITIAL BLOCK FILE 20
16E7      77                  MOV  M,A          ;TERMINATOR CHARACTER  FILE 20
16E8      C9                  RET             ;RETURN NZ               FILE 20
                      ;                                                FILE 20
                      ;*****************************************       FILE 20
                      ; NO PREVIOUS TERMINATOR - HOME THE CURSOR *     FILE 20
                      ;*****************************************       FILE 20
16E9                  SB080   EQU  $                                   FILE 20
16E9      2AC0FF              LHLD CRROW      ;SAVE THE CURRENT ROW AND FILE 20
16EC      E5                  PUSH H            ;COLUMN VALUES         FILE 20
16ED      CDA612              CALL DSEN1      ;HOME CURSOR FOR TRANSMISSIO FILE 20
16F0      2AC0FF              LHLD CRROW      ;GET NEW ROW AND COLUMN  FILE 20
16F3      C1                  POP  B          ;RECALL OLD ROW AND COLUMN FILE 20
16F4      7C                  MOV  A,H        ;COMPARE TO HOME ROW AND FILE 20
16F5      90                  SUB  B            ;COLUMN                FILE 20
16F6      47                  MOV  B,A                                 FILE 20
16F7      7D                  MOV  A,L                                 FILE 20
16F8      91                  SUB  C                                   FILE 20
16F9      B0                  ORA  B          ;DID CURSOR MOVE?        FILE 20
16FA      C2E016              JNZ  SB060      ;YES - SET FOR DATA PRESENT FILE 20
16FD      3E04                MVI  A,NSEND    ;NO - SET FOR NO DATA    FILE 20
16FF      C36D16              JMP  STDFL      ;RETURN                  FILE 20
                      ;                                                FILE 20
                      ;*****************************                   FILE 20
                      ; XPUTDC - TRANSMIT CHARACTER *                  FILE 20
                      ;*****************************                   FILE 20
                      ;                                                FILE 20
                      ;  ENTRY:  A = CHARACTER TO BE TRANSMITTED       FILE 20
                      ;                                                FILE 20
                      ;  EXIT :  NC - TRANSMIT SUCCESSFUL              FILE 20
                      ;           C - TRANSMIT FAILED                  FILE 20
                      ;           A DESTROYED                          FILE 20
                      ;                                                FILE 20
1702                  ECOUT   EQU  $          ;OUTPUT AN ESCAPE CODE   FILE 20
1702      3E1B                MVI  A,ESC                               FILE 20
1704      CD0817              CALL XUTDC                               FILE 20
1707      78                  MOV  A,B        ;FOLLOWED BY CHAR IN B-REG FILE 20
                      ;                                                FILE 20
1708                  XUTDC   EQU  $                                   FILE 20
1708      B7                  ORA  A          ;SET C-FLAG FALSE        FILE 20
1709      F5                  PUSH PSW        ;SAVE THE FLAGS AND A-REG FILE 20
```

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                                                                FILE 20
                                                                FILE 20
                                                                FILE 20
                                                                FILE 20
                                                                FILE 20
 170A   CDDF0F         CALL CRMTE     ;REMOTE MODE ENABLED?     FILE 20
 170D   CA1B17         JZ   XD005     ;NO - EXIT                FILE 20
 1710           XD001  EQU  $                                   FILE 20
 1710   F1             POP  PSW       ;YES - RECALL THE CHARACTER  FILE 20
 1711   F5             PUSH PSW       ;SAVE CONTENTS OF A AND FLAG FILE 20
 1712   CD1A78         CALL ZUTDC     ;TRANSMIT THE CHAR IN A-REG  FILE 20
 1715   DA3117         JC   XD050     ;ERROR - REPORT IT        FILE 20
 1718   C21D17         JNZ  XP010     ;WAIT - TRY AGAIN         FILE 20
 171B           XD005  EQU  $                                   FILE 20
 171B   F1             POP  PSW       ;DONE - RECALL FLAGS AND CHA FILE 20
 171C   C9             RET            ;RETURN                   FILE 20
                ;                      TRANSFER TRIGGER (SETS   FILE 20
                ;                      FLAG TRUE)               FILE 20
                ;************************************           FILE 20
                ; WAIT FOR DATACOM - RETRY OPERATION *          FILE 20
                ;************************************           FILE 20
 171D           XP010  EQU  $                                   FILE 20
 171D   E5             PUSH H         ;SAVE THE REGISTERS       FILE 20
 171E   D5             PUSH D                                   FILE 20
 171F   C5             PUSH B                                   FILE 20
 1720   CD6915         CALL ICTMN     ;MONITOR CARTRIDGE TAPES  FILE 20
 1723   3E0A           MVI  A,CBRKY   ;LOOK FOR A BREAK KEY HIT FILE 20
 1725   CD0870         CALL ZBCTL     ;BREAK KEY HIT?           FILE 20
 1728   C1             POP  B           ;(RESTORE REGISTERS)    FILE 20
 1729   D1             POP  D                                   FILE 20
 172A   E1             POP  H                                   FILE 20
 172B   CA1017         JZ   XD001     ;NO - TRY TO OUTPUT AGAIN FILE 20
 172E   CDB011         CALL BRKDC     ;YES - BREAK DATA COMM    FILE 20
                ;                     FALL INTO ERROR EXIT ROUTINE FILE 20
                ;                                               FILE 20
                ;******************************************     FILE 20
                ; DATA COMM ERROR DETECTED - REPORT ERROR *     FILE 20
                ;******************************************     FILE 20
 1731           XD050  EQU  $                                   FILE 20
 1731   33             INX  SP        ;RESTORE STACK LEVEL WITHOUT FILE 20
 1732   33             INX  SP          ;AFFECTING THE FLAGS    FILE 20
 1733   C2C911         JNZ  HNGU0     ;FATAL - HANG THE TERMINAL FILE 20
 1736   CD1470         CALL ZBELL     ;NON-FATAL - SOUND BELL   FILE 20
 1739   37             STC            ;RETURN FAIL (C-FLAG = TRUE) FILE 20
 173A   C9             RET                                      FILE 20
                ;                                               FILE 20
                ;******************************************     FILE 20
                ; XMOHME - HOME CURSOR INCLUDING TRANSMIT *     FILE 20
                ;   ONLY FIELDS                           *     FILE 20
                ;******************************************     FILE 20
 173B           XOHME  EQU  $                                   FILE 20
 173B   CD6B16         CALL STDF0     ;SET DATA COMM INPUT FLAG FILE 20
                ;                      TO ENABLE TRANSMIT ONLY  FILE 20
                ;                      FIELDS                   FILE 20
 173E   C3AE19         JMP  CRPH1     ;HOME THE CURSOR          FILE 20
                ;                                               FILE 20
                ;                                               FILE 20
                ;                                               FILE 20
                ;  FIELD ON SCREEN - SET SCREEN VALUES          FILE 20
                ;                                               FILE 20
 1741           BT450  EQU  $                                   FILE 20
 1741   3AC0FF         LDA  CRROW   ;SET LAST ROW VALUE TO      FILE 20
 1744   32C7FF         STA  LTROW     ;ROW FOUND                FILE 20
 1747   AF             XRA  A         ;SET LAST COL DONE TO ZERO FILE 20
 1748   32C8FF         STA  LTCOL                               FILE 20
```

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                                                                  FILE 20
                                                                  FILE 20
                                                                  FILE 20
                                                                  FILE 20
                                                                  FILE 20
 174B   2AD5FF          LHLD LADDR     ;SET ADDRESSES TO LOCATION FILE 20
 174E           BCKT5   EQU  $                                    FILE 20
 174E   22C9FF          SHLD LTLIN       ;OF FIELD                FILE 20
 1751   2B              DCX  H         ;SET CURADR TO CORRESPOND  FILE 20
 1752   22C3FF          SHLD CRADR                                FILE 20
 1755   C9              RET            ;RETURN                    FILE 20
                ;                                                 FILE 20
                ;  FIELD NOT FOUND - RESTORE DISPLAY              FILE 20
                ;                                                 FILE 20
 1756           BT500   EQU  $                                    FILE 20
 1756   2AD5FF          LHLD LADDR  ;RESTORE LAST LINE ADDRESS    FILE 20
 1759   22C9FF          SHLD LTLIN                                FILE 20
 175C           BT510   EQU  $                                    FILE 20
 175C   2ADEFF          LHLD LDATA  ;RESTORE CURRENT ROW AND      FILE 20
 175F   22C0FF          SHLD CRROW     ;COLUMN                    FILE 20
 1762   F6FF            ORI  377Q      ;SET Z FALSE               FILE 20
 1764   C9              RET            ;RETURN NOT FOUND (NZ)     FILE 20
                ;                                                 FILE 20
                ;*****************************************        FILE 20
                ; CHAIN - SET H,L TO POINTER FROM MEMORY *        FILE 20
                ;*****************************************        FILE 20
                ;                                                 FILE 20
                ;  ENTRY:  H,L = ADDRESS OF POINTER               FILE 20
                ;                                                 FILE 20
                ;  EXIT :  A = LSB OF POINTER                     FILE 20
                ;          H,L = POINTER VALUE                    FILE 20
                ;                                                 FILE 20
 1765           CAIN0   EQU  $                                    FILE 20
 1765   EB              XCHG           ;PUT ADDRESS INTO H,L      FILE 20
 1766           CAIN1   EQU  $                                    FILE 20
 1766   7D              MOV  A,L       ;COMPUTE LOCATION OF NEXT  FILE 20
 1767   E6F0            ANI  377Q-BLKSM  ;BLOCK POINTER IN BLOCK  FILE 20
 1769   6F              MOV  L,A       ;GET THE NEXT BLOCK ADDRESS FILE 20
 176A           CHAIN   EQU  $                                    FILE 20
 176A   7E              MOV  A,M       ;GET LSB OF POINTER        FILE 20
 176B   23              INX  H                                    FILE 20
 176C   66              MOV  H,M       ;PUT MSB INTO H-REGISTER   FILE 20
 176D   6F              MOV  L,A       ;PUT LSB INTO L-REGISTER   FILE 20
 176E           NFNCT   EQU  $           ;(NON-FUNCTION FOR ESC SEQ FILE 20
 176E   C9              RET            ;RETURN                    FILE 20
                ;                                                 FILE 20
                ;************************************************ FILE 20
                ; CHKFMS - CHECK FORMAT AND SOFT KEY DEFINE MODE * FILE 20
                ;************************************************ FILE 20
                ;                                                 FILE 20
                ;  ENTRY:  DON'T CARE                             FILE 20
                ;                                                 FILE 20
                ;  EXIT :  Z - NEITHER MODE ENABLED               FILE 20
                ;            A = 0                                FILE 20
                ;          NZ - MODE ENABLED                      FILE 20
                ;            A = -1, SOFT KEY MODE ENABLED        FILE 20
                ;            A >  0, FORMAT MODE ONLY ENABLED     FILE 20
                ;                                                 FILE 20
 176F           CKFM0   EQU  $                                    FILE 20
 176F   2E6C            MVI  L,SPOWL   ;TURN OF SPOW LATCH FIRST  FILE 20
 1771   36FF            MVI  M,SOWOF                              FILE 20
 1773           CKFMS   EQU $                                     FILE 20
 1773   3AAEFF          LDA  DPTYP     ;GET DISPLAY TYPE FLAG     FILE 20
 1776   B7              ORA  A         ;SOFT KEY DISPLAY ON?      FILE 20
 1777   C0              RNZ            ;YES - RETURN              FILE 20
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  1778                CKFMT   EQU   $                                                     FILE 20
  1778    3AF4FF              LDA   MFLG1       ;NO - GET MODE FLAGS                      FILE 20
  177B    E608                ANI   FRMAT       ;MASK FOR FORMAT FLAG AND                 FILE 20
  177D    C9                  RET                 ;RETURN                                 FILE 20
                      ;                                                                   FILE 20
                      ;****************************************                           FILE 20
                      ; CHKMLK - CHECK FOR MEMORY LOCK ENABLED *                          FILE 20
                      ;****************************************                           FILE 20
                      ;                                                                   FILE 20
                      ;  ENTRY:  DON'T CARE                                               FILE 20
                      ;                                                                   FILE 20
                      ;  EXIT :  Z => MEMORY LOCK ENABLED                                 FILE 20
                      ;          NZ => MEMORY LOCK NOT ENABLED                            FILE 20
                      ;          A,H,L DESTROYED                                          FILE 20
                      ;                                                                   FILE 20
  177E                CKMLK   EQU   $                                                     FILE 20
  177E    3AF4FF              LDA   MFLG1       ;GET SOFT MODE FLAGS                      FILE 20
  1781    2F                  CMA               ;MEMORY LOCK ENABLED FOR FUL              FILE 20
  1782    E604                ANI   MMLOK         ;LOCKOUT IF MEMORY LOCK SE              FILE 20
  1784    216BFF              LXI   H,MKROW     ;AND MEMORY LOCK ROW = 0                  FILE 20
  1787    B6                  ORA   M                                                     FILE 20
  1788    C9                  RET               ;RETURN                                   FILE 20
                      ;*********************************                                  FILE 20
                      ; CHKSFK - CHECK FOR SOFT KEY MODE *                                FILE 20
                      ;*********************************                                  FILE 20
                      ;                                                                   FILE 20
                      ;  EXIT :  Z - NORMAL MODE                                          FILE 20
                      ;            A = 0                                                  FILE 20
                      ;          NZ - SOFT KEY DEFINE MODE                                FILE 20
                      ;            A DESTROYED                                            FILE 20
                      ;                                                                   FILE 20
  1789                CKSFK   EQU   $                                                     FILE 20
  1789    3AAEFF              LDA   DPTYP       ;GET DISPLAY TYPE FLAG                    FILE 20
  178C    B7                  ORA   A           ;SET Z FALSE IF SOFT KEY                  FILE 20
  178D    C9                  RET                 ;ON AND RETURN                          FILE 20
                      ;                                                                   FILE 20
                      ;***********************                                            FILE 20
                      ; CD - CHARACTER DELETE *                                           FILE 20
                      ;***********************                                            FILE 20
  178E                DLWRP   EQU   $           ;DELETE WITH WRAP AROUND                  FILE 20
  178E    CD7317              CALL  CKFMS       ;FORMAT/SOFT KEY DEFINE MODE              FILE 20
  1791    3E20                MVI   A,WPDEL       ;(PUT WRAP FLAG IN A-REG)               FILE 20
  1793    CC9516              CZ    STMF2       ;NO - SET WRAP AROUND FLAG                FILE 20
                      ;                                                                   FILE 20
  1796                CRDEL   EQU   $                                                     FILE 20
  1796    CD8917              CALL  CKSFK       ;SOFT KEY DEFINE MODE?                    FILE 20
  1799    CAA117              JZ    CD010       ;NO - DO DELETE                           FILE 20
  179C    3AC0FF              LDA   CRROW       ;YES - GET CURSOR ROW                     FILE 20
  179F    0F                  RRC               ;IN DATA LINE?                            FILE 20
  17A0    D0                  RNC               ;NO - RETURN                              FILE 20
  17A1                CD010   EQU   $           ;YES - DO DELETE                          FILE 20
  17A1    AF                  XRA   A           ;ZERO SAVE AREA                           FILE 20
  17A2    3298FF              STA   CHSAV                                                 FILE 20
  17A5    CD0718              CALL  CD000       ;DELETE A CHARACTER                       FILE 20
  17A8    3A98FF              LDA   CHSAV       ;RECALL THE DELETED CHARACTE              FILE 20
  17AB    B7                  ORA   A           ;WAS IT A DISPLAY CONTROL?                FILE 20
  17AC    FA9617              JM    CRDEL       ;YES - CONTINUE DELETING                  FILE 20
                      ;*******************************************                        FILE 20
                      ; ADJUST FOR CHARACTERS BEYOND RIGHT MARGIN *                       FILE 20
                      ;*******************************************                        FILE 20
```

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                                                                        FILE 20
                                                                        FILE 20
                                                                        FILE 20
                                                                        FILE 20
                                                                        FILE 20
17AF   21C1FF          LXI  H,CRCOL                                     FILE 20
17B2   3ABEFF          LDA  RTMGN                                       FILE 20
17B5   BE              CMP  M          ;CURSOR BEYOND RIGHT MARGIN?     FILE 20
17B6   D8              RC              ;YES - DON'T CHECK WRAP          FILE 20
17B7   46              MOV  B,M        ;NO - SAVE CURRENT COLUMN        FILE 20
17B8   77              MOV  M,A        ;SET COLUMN TO RIGHT MARGIN      FILE 20
17B9   57              MOV  D,A        ;SAVE RIGHT MARGIN VALUE         FILE 20
17BA   2EF4            MVI  L,MFLG1-BASE                                FILE 20
17BC   4E              MOV  C,M        ;SAVE SOFT MODE FLAGS STATE      FILE 20
17BD   C5              PUSH B            ;AND CURRENT COLUMN            FILE 20
17BE   79              MOV  A,C        ;FORCE THE INSERT CHARACTER      FILE 20
17BF   E6FD            ANI  377Q-ISCHR    ;MODE OFF                     FILE 20
17C1   77              MOV  M,A                                         FILE 20
                ;                                                       FILE 20
                ;*****************************************              FILE 20
                ; DELETE PERFORMED - CHECK FOR WRAP AROUND *            FILE 20
                ;*****************************************              FILE 20
17C2   216FFF          LXI  H,MLGS2    ;GET TERMINAL MODE FLAGS         FILE 20
17C5   7E              MOV  A,M        ;MASK OUT DELETE WRAP FLAG       FILE 20
17C6   E6DF            ANI  377Q-WPDEL                                  FILE 20
17C8   BE              CMP  M          ;DELETE WRAP AROUND ENABLED?     FILE 20
17C9   CAFE17          JZ   CD050      ;NO - EXIT                       FILE 20
17CC   77              MOV  M,A        ;YES - UPDATE MODE FLAGS         FILE 20
                ;*****************************************              FILE 20
                ; TRANSFER A CHRACTER UP FROM THE NEXT LINE *           FILE 20
                ;*****************************************              FILE 20
17CD            CD020  EQU  $                                           FILE 20
17CD   3E20            MVI  A,ABLNK    ;PRESET DELETED CHARACTER        FILE 20
17CF   3298FF          STA  CHSAV        ;TO A BLANK                    FILE 20
17D2   21C0FF          LXI  H,CRROW    ;SET TO DELETE FIRST             FILE 20
17D5   34              INR  M            ;CHARACTER AT LEFT MARGIN      FILE 20
17D6   23              INX  H            ;FROM NEXT ROW                 FILE 20
17D7   3ABFFF          LDA  LTMGN                                       FILE 20
17DA   77              MOV  M,A                                         FILE 20
17DB   CD2E07          CALL RADR4      ;CHARACTER EXIST?                FILE 20
17DE   CC1618          CZ   CRDL1      ;YES - DELETE IT                 FILE 20
17E1   21C0FF          LXI  H,CRROW    ;RESTORE ROW NUMBER AND SET      FILE 20
17E4   35              DCR  M            ;COLUMN TO RIGHT MARGIN        FILE 20
17E5   23              INX  H                                           FILE 20
17E6   3ABEFF          LDA  RTMGN                                       FILE 20
17E9   77              MOV  M,A                                         FILE 20
17EA   3A98FF          LDA  CHSAV      ;GET THE DELETED CHARACTER       FILE 20
17ED   FE20            CPI  ABLNK      ;BLANK CHARACTER DELETED?        FILE 20
17EF   CAFE17          JZ   CD050      ;YES - EXIT                      FILE 20
17F2   0600            MVI  B,0        ;NO - SET TO FORCE ENHANCE       FILE 20
17F4   CD941E          CALL DSPC2      ;DISPLAY THE CHARACTER           FILE 20
17F7   3A98FF          LDA  CHSAV      ;RECALL THE DELETED CHARACTE     FILE 20
17FA   B7              ORA  A          ;WAS IT ASCII?                   FILE 20
17FB   FACD17          JM   CD020      ;NO - TRANSFER ANOTHER BYTE      FILE 20
                ;*****************************************              FILE 20
                ; EXIT - RESTORE CURSOR COLUMN AND "MDFLG1" *           FILE 20
                ;*****************************************              FILE 20
17FE            CD050  EQU  $                                           FILE 20
17FE   C1              POP  B          ;RECALL ORIGINAL VALUES          FILE 20
17FF   21C1FF          LXI  H,CRCOL                                     FILE 20
1802   70              MOV  M,B        ;RESTORE CURSOR COLUMN           FILE 20
1803   2EF4            MVI  L,MFLG1-BASE                                FILE 20
1805   71              MOV  M,C        ;RESTORE "MDFLG1"                FILE 20
1806   C9              RET             ;RETURN                          FILE 20
                ;                                                       FILE 20
```

```
1807              CD000  EQU $                                        FILE 20
1807    CD2E07           CALL RADR4     ;DOES CHARACTER EXIST?        FILE 20
180A    C0               RNZ            ;NO - RETURN                  FILE 20
180B    CD9718           CALL CD500     ;SKIP OVER SINGLE DISPLAY     FILE 20
                  ;                       ENHANCEMENT CODE            FILE 20
180E    CD7817           CALL CKFMT     ;FORMAT MODE?                 FILE 20
1811    CA1618           JZ   CD100     ;NO - DELETE THE CHARACTER    FILE 20
1814    04               INR  B         ;CURSOR IN PROTECTED FIELD?   FILE 20
1815    C8               RZ             ;YES - RETURN                 FILE 20
                  ;******************************                      FILE 20
                  ; CHRDL1 - DELETE ONE CHARACTER *                   FILE 20
                  ;******************************                      FILE 20
                  ;                                                   FILE 20
                  ;  ENTRY:  C = CHARACTER COLUMN POSITION            FILE 20
                  ;          D,E = ADDRESS OF CHAR TO BE DELETED      FILE 20
                  ;                                                   FILE 20
                  ;  EXIT :  ALL REGISTERS DESTROYED                  FILE 20
                  ;          CHSAV = CHARACTER DELETED (UNCHANGED     FILE 20
                  ;            IF A CHARACTER HAS NOT BEEN DELETED)   FILE 20
                  ;                                                   FILE 20
1816              CRDL1  EQU  $                                       FILE 20
1816              CD100  EQU  $                                       FILE 20
1816    1A               LDAX D         ;GET CHARACTER TO BE DELETED  FILE 20
1817    FECC             CPI EOL      ;IS IT EOL?                     FILE 20
1819    C8               RZ           ;YES - RETURN                   FILE 20
181A    3298FF           STA  CHSAV     ;SAVE THE DELETED CHARACTER   FILE 20
181D    62               MOV  H,D       ;H,L = ADDR OF CHAR TO FILL   FILE 20
181E    6B               MOV  L,E       ;D,E = ADDR OF CHAR TO MOVE   FILE 20
                  ;*******************************************         FILE 20
                  ; MOVE CHARACTERS DOWN TO PREVIOUS POSITION *       FILE 20
                  ;*******************************************         FILE 20
181F              CD110  EQU  $                                       FILE 20
181F    CDBB0B           CALL NTCHR     ;GET THE NEXT CHARACTER       FILE 20
1822    C27118           JNZ  CD210     ;EOL LINK - TERMINATE DELETE  FILE 20
1825    47               MOV  B,A       ;SAVE CHARACTER IN B-REGISTE  FILE 20
1826    FEC0             CPI  EHLIM+1   ;ASCII OR ENHANCEMENT CODE?   FILE 20
1828    DA4618           JC   CD120     ;YES - SEE IF PAST MARGIN     FILE 20
                  ;********************************************        FILE 20
                  ; FORMAT CONTROL CODE FOUND - CHECK FUNCTION *       FILE 20
                  ;********************************************        FILE 20
182B    FECC             CPI  EOL       ;END OF LINE?                 FILE 20
182D    CA8518           JZ   CD250     ;YES - TERMINATE DELETE       FILE 20
1830    FEC3             CPI  FILL      ;END OF LINE FILL?            FILE 20
1832    CA6D18           JZ   CD200     ;YES - TERMINATE DELETE       FILE 20
1835    CD8E18           CALL CD400     ;FORMAT MODE & DELETE ASCII?  FILE 20
1838    CA4618           JZ   CD120     ;NO - MOVE NEW CHARACTER      FILE 20
183B    78               MOV  A,B       ;YES - GET CHAR TO BE MOVED   FILE 20
183C    FEC0             CPI  STPR      ;IS IT START PROTECT?         FILE 20
183E    CA1F19           JZ   CER02     ;YES - CLEAR REST OF FIELD    FILE 20
                  ;                       AND TERMINATE DELETE        FILE 20
1841    FEC5             CPI  ALPHA     ;TYPE DEFINITION?             FILE 20
1843    F21F18           JP   CD110     ;YES - SKIP OVER CHARACTER    FILE 20
                  ;                                                   FILE 20
                  ;**************************************              FILE 20
                  ; CHARACTER TO BE MOVED - CHECK MARGIN *             FILE 20
                  ;**************************************              FILE 20
1846              CD120  EQU  $                                       FILE 20
1846    3ABEFF           LDA  RTMGN                                   FILE 20
1849    B9               CMP  C         ;CHAR FROM BEYOND MARGIN?     FILE 20
184A    C25418           JNZ  CD130     ;NO - CONTINUE DELETE         FILE 20
```

```
                                                                        FILE 20
                                                                        FILE 20
                                                                        FILE 20
                                                                        FILE 20
                                                                        FILE 20
 184D   3A98FF          LDA  CHSAV      ;YES - GET DELETED CHARACTER    FILE 20
 1850   B7              ORA  A          ;IS IT ASCII?                   FILE 20
 1851   3620            MVI  M,ABLNK      ;(SET BLANK BY DEFAULT)       FILE 20
 1853   F0              RP              ;YES - TERMINATE DELETE         FILE 20
                ;                        NO - PUT CHAR INTO PREV CHAR   FILE 20
                ;**********************************************         FILE 20
                ; MOVE CHARACTER INTO PREVIOUS CHARACTER POSITON *      FILE 20
                ;**********************************************         FILE 20
 1854           CD130  EQU  $                                           FILE 20
 1854   70              MOV  M,B        ;REPLACE PREVIOUS CHARACTER     FILE 20
 1855   78              MOV  A,B                                        FILE 20
 1856   B7              ORA  A          ;IS CHARACTER ASCII?            FILE 20
 1857   FA5B18          JM   CD140      ;NO - ADVANCE TO NEXT CHAR      FILE 20
 185A   0C              INR  C          ;YES - INCREMENT COLUMN #       FILE 20
 185B           CD140  EQU  $                                           FILE 20
 185B   CDBA0B          CALL NTCH0      ;GET THE NEXT CHARACTER         FILE 20
 185E   FEC5            CPI  ALPHA      ;TYPE DEFINITION?               FILE 20
 1860   DA6918          JC   CD150      ;NO - CONTINUE MOVING CHARS     FILE 20
 1863   CD8E18          CALL CD400      ;FORMAT MODE & DELETE ASCII?    FILE 20
 1866   C4BB0B          CNZ  NTCHR      ;YES - ADVANCE TO NEXT CHAR     FILE 20
 1869           CD150  EQU  $                                           FILE 20
 1869   EB              XCHG            ;RESTORE REGISTER POSITIONS     FILE 20
 186A   C31F18          JMP  CD110      ;MOVE NEXT CHARACTER            FILE 20
                ;                                                       FILE 20
                ;******************************************             FILE 20
                ; END OF LINE FILL CHARACTER FOUND - CLEAR THE *        FILE 20
                ;   REST OF THE LINE                           *        FILE 20
                ;******************************************             FILE 20
 186D           CD200  EQU  $                                           FILE 20
 186D   CD6517          CALL CAIN0      ;GET END OF LINE LINK IN H,L    FILE 20
 1870   EB              XCHG            ;EXCHANGE H,L AND D,E           FILE 20
                ;****************************************               FILE 20
                ; END OF LINE LINK FOUND - CLEAR THE REST OF *          FILE 20
                ;   THE LINE                                 *          FILE 20
                ;****************************************               FILE 20
 1871           CD210  EQU  $                                           FILE 20
 1871   CD8E18          CALL CD400      ;FORMAT MODE & DELETE ASCII?    FILE 20
 1874   EB              XCHG              ;(SET D,E TO LAST CHAR ADD    FILE 20
 1875   2B              DCX  H             ;H,L TO LSB OF NEXT LINE     FILE 20
                ;                           LINK)                       FILE 20
 1876   C28918          JNZ  CD260      ;YES - CLEAR REST OF FIELD      FILE 20
                ;                         TO LSB OF NEXT LINE LINK      FILE 20
 1879   3A98FF          LDA  CHSAV      ;RECALL DELETED CHARACTER       FILE 20
 187C   B7              ORA  A          ;WAS IT ASCII?                  FILE 20
 187D   F28918          JP   CD260      ;YES - END LINE WITH EOL        FILE 20
 1880   3EC3            MVI  A,FILL     ;NO - END LINE WITH FILL        FILE 20
 1882   C3E318          JMP  CERL1      ;CLEAR REST OF LINE             FILE 20
                ;                                                       FILE 20
                ;**********************************                     FILE 20
                ; EOL FOUND - CLEAR THE REST OF THE LINE *              FILE 20
                ;**********************************                     FILE 20
 1885           CD250  EQU  $                                           FILE 20
 1885   CD6517          CALL CAIN0      ;GET EOL LINK IN H,L            FILE 20
 1888   2B              DCX  H          ;SET TO LSB OF NEXT LINE LIN    FILE 20
 1889           CD260  EQU  $           ;CLEAR THE REST OF THE LINE     FILE 20
 1889   3ECC            MVI  A,EOL         ;TERMINATING WITH AN EOL     FILE 20
 188B   C3E318          JMP  CERL1                                      FILE 20
                ;****************************************               FILE 20
                ; CHD400 - CHECK FOR FORMAT MODE ENABLED AND *          FILE 20
                ;   DISPLAYABLE ASCII CHARACTER DELETED      *          FILE 20
```

```
                                                                     FILE 20
                                                                     FILE 20
                                                                     FILE 20
                                                                     FILE 20
                                                                     FILE 20
                ;********************************************       FILE 20
                ;                                                    FILE 20
                ;  EXIT :  NZ - FORMAT MODE AND DELETE ASCII         FILE 20
                ;           Z - NOT FORMAT MODE OR NON-DISPLAY       FILE 20
                ;             CODE DELETED                           FILE 20
                ;                                                    FILE 20
 188E           CD400  EQU  $                                        FILE 20
 188E  3A98FF          LDA  CHSAV     ;GET CHARACTER DELETED         FILE 20
 1891  B7              ORA  A         ;IS IT DISPAYABLE ASCII        FILE 20
 1892  F27817          JP   CKFMT     ;YES - CHECK FOR FORMAT MODE   FILE 20
 1895  AF              XRA  A         ;NO - RETURN Z                 FILE 20
 1896  C9              RET                                           FILE 20
                ;                                                    FILE 20
                ;*********************************************      FILE 20
                ; CHD500 - CHECK FOR DISPLAY EHANCEMENT DELETE *     FILE 20
                ;*********************************************      FILE 20
                ;                                                    FILE 20
                ;  ENTRY:  D,E = CHARACTER TO BE DELETED             FILE 20
                ;                                                    FILE 20
                ;  EXIT :  D,E = ACTUAL CHARACTER TO DELETE          FILE 20
                ;          A,L DESTROYED                             FILE 20
                ;                                                    FILE 20
 1897           CD500  EQU  $                                        FILE 20
 1897  1A              LDAX D         ;GET CHARACTER TO BE DELETED   FILE 20
 1898  87              ADD  A         ;DISPLAY ENHANCEMENT CODE?     FILE 20
 1899  D0              RNC            ;ASCII - LET IT BE DELETED     FILE 20
 189A  F8              RM             ;FORMAT CONTROL - DELETE IT    FILE 20
 189B  2E02            MVI  L,2       ;YES - LOOK FOR POSSIBLE       FILE 20
 189D  D5              PUSH D           ;DOUBLE EHANCEMENT CODE      FILE 20
 189E           CD510  EQU  $                                        FILE 20
 189E  CDBB0B          CALL NTCHR     ;GET THE NEXT CHARACTER        FILE 20
 18A1  C2AB18          JNZ  CD515     ;EXIT IF EOL LINK              FILE 20
 18A4  87              ADD  A         ;ENHANCEMENT CODE?             FILE 20
 18A5  D2AD18          JNC  CD520     ;ASCII - CHECK FOR SCAN DONE   FILE 20
 18A8  FA9E18          JM   CD510     ;FORMAT CONTROL - CONTINUE     FILE 20
 18AB           CD515  EQU  $                                        FILE 20
 18AB  D1              POP  D         ;YES - DELETE ENHANCEMENT      FILE 20
 18AC  C9              RET                                           FILE 20
                ;********************************************       FILE 20
                ; ASCII CHARACTER FOUND - CHECK FOR SCAN DONE *      FILE 20
                ;********************************************       FILE 20
 18AD           CD520  EQU  $                                        FILE 20
 18AD  2D              DCR  L         ;NEXT ASCII CHARACTER FOUND?   FILE 20
 18AE  C29E18          JNZ  CD510     ;NO - CONTINUE SCAN            FILE 20
                ;*****************************************          FILE 20
                ; NEXT ASCII CHARACTER OR EOL LINK FOUND - *         FILE 20
                ;   DON'T DELETE DISPLAY ENHANCEMENT CODE  *         FILE 20
                ;*****************************************          FILE 20
 18B1  D1              POP  D         ;RECALL ORIGINAL ADDRESS       FILE 20
 18B2  C3BB0B          JMP  NTCHR     ;SET TO DELETE NEXT CHAR       FILE 20
                ;                                                    FILE 20
                ;*****************************************          FILE 20
                ; CHRDL2 - DELETE CHARACTER W/REGISTER SAVE *        FILE 20
                ;*****************************************          FILE 20
                ;                                                    FILE 20
                ;  ENTRY:  C = CHARACTER COLUMN POSITION             FILE 20
                ;          D,E = ADDRESS OF CHAR TO BE DELETED       FILE 20
                ;                                                    FILE 20
                ;  EXIT :  B,C = B,C(ENTRY)                          FILE 20
                ;          D,E = D,E(ENTRY) + 1                      FILE 20
```

```
                      ;         A,H,L DESTROYED                             FILE 20
                      ;                                                     FILE 20
 18B5                 CRDL2  EQU  $                                         FILE 20
 18B5   C5                   PUSH B          ;SAVE REGISTERS B,C            FILE 20
 18B6   D5                   PUSH D            ;AND D,E                     FILE 20
 18B7   CD1618               CALL CRDL1      ;DELETE THE CHARACTER          FILE 20
 18BA   D1                   POP  D          ;RESTORE REGISTER D,E          FILE 20
 18BB   C1                   POP  B            ;AND B,C                     FILE 20
 18BC   13                   INX  D          ;INCREMENT D,E                 FILE 20
 18BD   C9                   RET             ;RETURN                        FILE 20
                      ;                                                     FILE 20
                      ;**********************                               FILE 20
                      ; CLEARL - CLEAR LINE *                               FILE 20
                      ;**********************                               FILE 20
                      ;                                                     FILE 20
                      ;  ENTRY:  DON'T CARE                                 FILE 20
                      ;                                                     FILE 20
                      ;  EXIT :  A = -1, ROW NOT FOUND                      FILE 20
                      ;            =  0, CHARACTER FOUND AND CLEAR DONE     FILE 20
                      ;            >  0, COLUMN PAST EOL, CLEAR NOT DONE    FILE 20
                      ;                                                     FILE 20
 18BE                 CEARL  EQU  $                                         FILE 20
 18BE   CD2E07               CALL RADR4      ;DOES ROW EXIST?               FILE 20
 18C1   C0                   RNZ             ;NO - RETURN                   FILE 20
 18C2   CD7317               CALL CKFMS      ;FORMAT/SOFT KEY DEFINE MODE   FILE 20
 18C5   CAD618               JZ   CERLA      ;NO - DO NORMAL CLEAR LINE     FILE 20
 18C8   F21C19               JP   CL400      ;FORMAT MODE - CLEAR FIELD     FILE 20
                      ;*********************************************        FILE 20
                      ; SOFT KEY DEFINE MODE - CLEAR DATA ROWS ONLY *        FILE 20
                      ;*********************************************        FILE 20
 18CB   3AC0FF               LDA  CRROW      ;GET CURSOR ROW                FILE 20
 18CE   0F                   RRC             ;IN DATA LINE (ODD ROW #)?     FILE 20
 18CF   D0                   RNC             ;NO - INHIBIT CLEAR            FILE 20
 18D0   1A                   LDAX D          ;GET FIRST CHARACTER           FILE 20
 18D1   FEC1                 CPI  ENDPR      ;END PROTECT?                  FILE 20
 18D3   CCBB0B               CZ   NTCHR      ;YES - SKIP TO 1ST ASCII CHA   FILE 20
 18D6                 CERLA  EQU  $                                         FILE 20
 18D6   CD8917               CALL CKSFK      ;SOFT KEY DEFINE MODE?         FILE 20
 18D9   3E0C                 MVI  A,STFRN      ;(SET CONTROL CODE)          FILE 20
 18DB   CC0870               CZ   ZBCTL      ;NO - UPDATE FOREIGN MODE      FILE 20
 18DE   3ECC                 MVI  A,EOL      ;CLEAR LINE WITH "EOL" ENDIN   FILE 20
                      ;                                                     FILE 20
                      ;******************************                       FILE 20
                      ; CLERLO - CLEAR REST OF LINE *                       FILE 20
                      ;******************************                       FILE 20
                      ;                                                     FILE 20
                      ;  ENTRY:  A = TERMINATOR CHARACTER                   FILE 20
                      ;          D,E = CLEAR STARTING ADDRESS               FILE 20
                      ;                                                     FILE 20
                      ;  EXIT :  SEE "CLEARL"                               FILE 20
                      ;                                                     FILE 20
 18E0                 CERLO  EQU  $                                         FILE 20
 18E0   2AC9FF               LHLD LTLIN      ;GET CURRENT LINE ADDRESS      FILE 20
 18E3                 CERL1  EQU  $                                         FILE 20
 18E3   328FFF               STA  FLCHR      ;SAVE TERMINATOR CHARACTER     FILE 20
 18E6   44                   MOV  B,H        ;SET B,C TO ADDRESS OF NEXT    FILE 20
 18E7   4D                   MOV  C,L          ;LINE POINTER'S LSB          FILE 20
 18E8   7B                   MOV  A,E        ;SET H,L TO ADDRESS OF NEXT    FILE 20
 18E9   E6F0                 ANI  377Q-BLKSM ;BLOCK LINK IN CURRENT         FILE 20
 18EB   6F                   MOV  L,A          ;BLOCK                       FILE 20
```

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                                                                        FILE 20
8080 MACRO ASSEMBLER, VER 2.4          ERRORS = 0 PAGE 114              FILE 20
                                                                        FILE 20
                                                                        FILE 20
                                                                        FILE 20
  18EC   62             MOV H,D                                         FILE 20
  18ED   7E             MOV A,M        ;GET NEXT BLOCK                  FILE 20
  18EE   03             INX  B          ;SET B,C TO MSB OF NEXT LINE    FILE 20
  18EF   71             MOV  M,C           ;POINTER                     FILE 20
  18F0   23             INX  H                                          FILE 20
  18F1   4E             MOV  C,M                                        FILE 20
  18F2   70             MOV  M,B                                        FILE 20
  18F3   45             MOV  B,L        ;SAVE LSB OF LINK'S MSB ADDR    FILE 20
  18F4   61             MOV  H,C                                        FILE 20
  18F5   6F             MOV  L,A                                        FILE 20
  18F6   E5             PUSH H          ;SAVE ADDRESS OF NEXT BLOCK     FILE 20
                 ;                                                      FILE 20
                 ;*****************************************             FILE 20
                 ; INSERT FILL CHARS BETWEEN LINK AND EOL *             FILE 20
                 ;*****************************************             FILE 20
  18F7   7B             MOV A,E         ;COMPUTE NO. OF FILLS           FILE 20
  18F8   E60F           ANI BLKSM                                       FILE 20
  18FA   D602           SUI 2           ;LESS THAN 2?                   FILE 20
  18FC   FA0C19         JM  CL160       ;YES - RELEASE THE BLOCK        FILE 20
  18FF   58             MOV  E,B          ;SET H,L TO ADDRESS OF MSB    FILE 20
  1900   EB             XCHG                ;PART OF NEXT BLOCK POINTE  FILE 20
  1901           CL120  EQU $                                           FILE 20
  1901   23             INX  H          ;ADVANCE TO NEXT BYTE           FILE 20
  1902   36C3           MVI  M,FILL     ;STORE FILL CHARACTER           FILE 20
  1904   3D             DCR  A          ;ALL BYTES DONE?                FILE 20
  1905   F20119         JP   CL120      ;NO - CONTINUE FILLING          FILE 20
  1908   3A8FFF         LDA  FLCHR      ;YES - GET AND STORE FINAL      FILE 20
  190B   77             MOV  M,A           ;FILL CHARACTER              FILE 20
                 ;*****************************                         FILE 20
                 ; RELEASE EXCESS DISPLAY BLOCKS *                      FILE 20
                 ;*****************************                         FILE 20
  190C           CL160  EQU  $                                          FILE 20
  190C   D1             POP  D          ;RECALL ADDRESS OF NEXT BLOC    FILE 20
  190D   7B             MOV  A,E                                        FILE 20
  190E   2F             CMA             ;IS THE LINK AN EOL LINK        FILE 20
  190F   E60F           ANI  BLKSM        ;(LOW 4 BITS NOT ALL ONES)    FILE 20
  1911   C21A19         JNZ  CL310      ;YES - EXIT                     FILE 20
  1914   1B             DCX  D          ;NO - ADD BLOCKS TO FREE LIS    FILE 20
  1915   1B             DCX  D          ;SET ADDRESS TO LSB OF NEXT     FILE 20
  1916   1B             DCX  D            ;LINE FIELD IN FIRST BLOCK    FILE 20
  1917   CDF206         CALL PTLIN      ;ADD BLOCKS TO FREE LIST        FILE 20
  191A           CL310  EQU $                                           FILE 20
  191A   AF             XRA A           ;SET ZERO FLAG FOR CLEARS       FILE 20
  191B   C9             RET             ;RETURN                         FILE 20
                 ;                                                      FILE 20
                 ;************************************                  FILE 20
                 ; CLEAR LINE FUNCTION FOR FORMAT MODE *                FILE 20
                 ;************************************                  FILE 20
  191C           CL400  EQU  $                                          FILE 20
  191C   04             INR  B          ;CURSOR IN PROTECTED FIELD?     FILE 20
  191D   C8             RZ              ;YES - RETURN, DON'T DO CLEA    FILE 20
                 ;*****************************************             FILE 20
                 ; CLEAR UNPROTECTED FIELD                 *            FILE 20
                 ; D,E = ADDRESS OF FIRST ASCII CHAR IN FIELD *         FILE 20
                 ;*****************************************             FILE 20
  191E           CER01  EQU $                                           FILE 20
  191E   EB             XCHG                                            FILE 20
  191F           CER02  EQU  $                                          FILE 20
  191F   EB             XCHG            ;PUT CHARACTER ADDR INTO D,E    FILE 20
  1920   13             INX  D          ;SET TO PREVIOUS CHARACTER      FILE 20
```

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                                                                        FILE 20
                                                                        FILE 20
                                                                        FILE 20
                                                                        FILE 20
                                                                        FILE 20
1921                CL510  EQU  $                                       FILE 20
1921   CDBB0B              CALL NTCHR     ;GET THE NEXT CHARACTER       FILE 20
1924   C24C19              JNZ  CL580     ;CHECK EXIT IF EOL LINK       FILE 20
1927   87                  ADD A        ;ASCII?                         FILE 20
1928   DA3219              JC  CL540    ;NO - CONTINUE                  FILE 20
192B   3E20                MVI  A,ABLNK   ;YES - STORE BLANK            FILE 20
192D   12                  STAX D                                       FILE 20
192E   0C                  INR C          ;INCREMENT COLUMN             FILE 20
192F   C32119              JMP  CL510     ;TRY NEXT CHARACTER           FILE 20
                    ;*********************                              FILE 20
                    ; NON-ASCII CHARACTER *                             FILE 20
                    ;*********************                              FILE 20
1932                CL540  EQU $                                        FILE 20
1932   FA3B19              JM  CL550    ;NOT DSPLY CNTRL - CHECK MORE   FILE 20
                    ;*********************************                  FILE 20
                    ; DELETE DISPLAY ENHANCEMENT CHAR *                 FILE 20
                    ;*********************************                  FILE 20
1935                CL544  EQU  $                                       FILE 20
1935   CDB518              CALL CRDL2     ;DELETE ENHANCEMENT CODE      FILE 20
1938   C32119              JMP  CL510     ;CONTINUE CLEARING            FILE 20
                    ;                                                   FILE 20
                    ;******************************                     FILE 20
                    ; NOT ASCII OR DISPLAY CONTROL *                    FILE 20
                    ;******************************                     FILE 20
193B                CL550  EQU  $                                       FILE 20
193B   1F                  RAR            ;RESTORE CHARACTER            FILE 20
193C   FEC3                CPI  FILL      ;END OF LINE FILL?            FILE 20
193E   CA2119              JZ   CL510     ;YES - GO TO NEXT CHARACTER   FILE 20
1941   FEC0                CPI  STPR      ;START PROTECT?               FILE 20
1943   C8                  RZ             ;YES - TERMINATE CLEAR        FILE 20
1944   FEC5                CPI  SPFLG+1   ;FORMAT CONTROL CODE?         FILE 20
1946   DA3519              JC   CL544     ;YES - DELETE IT              FILE 20
1949   C32119              JMP  CL510     ;NO - GO TO NEXT CHARACTER    FILE 20
                    ;********************                               FILE 20
                    ; LINK FOUND         *                              FILE 20
                    ; MOVE TO NEXT BLOCK *                              FILE 20
                    ;********************                               FILE 20
194C                CL580  EQU  $                                       FILE 20
194C   1A                  LDAX D         ;GET NEXT LINE LINK'S MSB     FILE 20
194D   FECE                CPI  EOP       ;END OF DISPLAY LIST?         FILE 20
194F   C8                  RZ             ;YES - RETURN                 FILE 20
1950   CD061B              CALL FDSR2     ;CONTINUATION FIELD?          FILE 20
1953   CA2119              JZ   CL510     ;YES - CONTINUE CLEAR         FILE 20
1956   AF                  XRA  A         ;NO - TERMINATE CLEAR AND     FILE 20
1957   C9                  RET              ;RETURN END ON END OF FIEL  FILE 20
                    ;                                                   FILE 20
                    ;**************************                         FILE 20
                    ; DSPMSG - DISPLAY MESSAGE *                        FILE 20
                    ;**************************                         FILE 20
                    ;                                                   FILE 20
                    ;  ENTRY:  NC - ADD MESSAGE TO NORMAL DISPLAY       FILE 20
                    ;           C - REPLACE DISPLAY WITH MESSAGE        FILE 20
                    ;          MSGPT1-MSGPT8 = POINTERS TO MESSAGE      FILE 20
                    ;            SECTIONS                               FILE 20
                    ;                                                   FILE 20
                    ;  EXIT :  ALL REGISTERS DESTROYED                  FILE 20
                    ;                                                   FILE 20
1958                DPMS0  EQU  $         ;SET C-FLAG TO FORCE DISPLAY  FILE 20
1958   37                  STC              ;REPLACEMENT BY MESSAGE     FILE 20
1959                DPMS1  EQU  $                                       FILE 20
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                                                                      FILE 20
                                                                      FILE 20
                                                                      FILE 20
 1959   22F1FF          SHLD MGPT1     ;SET MESSAGE POINTER 1         FILE 20
 195C          DPMSG    EQU  $                                        FILE 20
 195C   D27D19          JNC  DM500     ;ADD MESSAGE TO DISPLAY        FILE 20
 195F   014FFE          LXI  B,DPSTR   ;SET DESTINATION POINTER       FILE 20
 1962   21F2FF          LXI  H,MGPT1+1   ;SET INITIAL TABLE POINTER   FILE 20
               ;                                                      FILE 20
               ;  TRANSFER MESSAGE TO MESSAGE BUFFER                  FILE 20
               ;                                                      FILE 20
 1965          DS010    EQU  $                                        FILE 20
 1965   56              MOV  D,M       ;GET POINTER TO MESSAGE        FILE 20
 1966   2B              DCX  H                                        FILE 20
 1967   5E              MOV  E,M                                      FILE 20
 1968   2B              DCX  H         ;SET TO NEXT POINTER           FILE 20
 1969   EB              XCHG           ;PUT POINTER INTO H,L          FILE 20
 196A   CD7C0B          CALL MVCHR     ;XFR MESSAGE PART TO BUFFER    FILE 20
 196D   EB              XCHG           ;PUT POINTER TO TABLE IN H,L   FILE 20
 196E   CA6519          JZ   DS010     ;DO NEXT PART IF NOT EOP END   FILE 20
 1971   214FFE          LXI  H,DPSTR   ;SET DISPLAY POINTER TO        FILE 20
 1974   22FEFF          SHLD DSPST       ;MESSAGE AREA                FILE 20
 1977   3E18            MVI  A,MXROW+1   ;REMOVE CURSOR FROM DISPLA   FILE 20
 1979   322780          STA  ICRRW                                    FILE 20
 197C   C9              RET            ;RETURN                        FILE 20
               ;                                                      FILE 20
               ;                                                      FILE 20
               ;  ADD MESSAGE TO NORMAL DISPLAY                       FILE 20
               ;                                                      FILE 20
 197D          DM500    EQU  $                                        FILE 20
 197D   CDC10C          CALL SKYOF     ;FORCE NORMAL DISPLAY ON       FILE 20
 1980   21F2FF          LXI  H,MGPT1+1   ;SET INITIAL TABLE POINTER   FILE 20
 1983          DM510    EQU  $                                        FILE 20
 1983   56              MOV  D,M       ;GET POINTER TO MESSAGE        FILE 20
 1984   2B              DCX  H                                        FILE 20
 1985   5E              MOV  E,M                                      FILE 20
 1986   2B              DCX  H         ;SET TO NEXT POINTER           FILE 20
 1987   E5              PUSH H         ;SAVE TABLE POINTER            FILE 20
 1988   EB              XCHG           ;PUT MESSAGE POINTER IN H,L    FILE 20
 1989   CD4C0F          CALL XS2DS     ;XFR MESSAGE TO THE DISPLAY    FILE 20
 198C   E1              POP  H         ;RECALL TABLE POINTER          FILE 20
 198D   CA8319          JZ   DM510     ;DO NEXT PART IF NOT EOP END   FILE 20
               ;                        FALL INTO "RSTDSP" TO         FILE 20
               ;                          FORCE DISPLAY ON            FILE 20
               ;*********************************                      FILE 20
               ; RSTDSP - RESTORE NORMAL DISPLAY *                     FILE 20
               ;*********************************                      FILE 20
               ;                                                      FILE 20
               ;  ENTRY:  DON'T CARE                                  FILE 20
               ;                                                      FILE 20
               ;  EXIT :  PROCESSOR FLAGS UNCHANGED                   FILE 20
               ;          H,L DESTROYED                               FILE 20
               ;                                                      FILE 20
 1990          RTDSP    EQU  $                                        FILE 20
 1990   2ACBFF          LHLD TPLIN     ;GET TOP LINE ADDRESS          FILE 20
 1993   2B              DCX  H         ;SET TO FIRST CHAR ADDRESS     FILE 20
 1994   22FEFF          SHLD DSPST     ;SET DISPLAY START POINTER     FILE 20
 1997   C31D0F          JMP  DSLN1     ;SET THE DISPLAY CURSOR        FILE 20
               ;                                                      FILE 20
               ;*****************************                          FILE 20
               ; FORMON - ENTER FORMAT MODE *                          FILE 20
               ;*****************************                          FILE 20
 199A          FRMON    EQU  $                                        FILE 20
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199A   CDC20F          CALL CEDIT     ;EDIT MODE?                          FILE 20
199D   C0              RNZ            ;YES - INHIBIT FORMAT MODE           FILE 20
199E   214F00          LXI  H,MXCOL   ;NO - SET MARGINS TO ENDS OF         FILE 20
19A1   22BEFF          SHLD RTMGN       ;DISPLAY                           FILE 20
19A4   3E08            MVI  A,FRMAT   ;TURN ON FORMAT MODE FLAG            FILE 20
19A6   CD0E70          CALL ZTMD1                                          FILE 20
                ;                  SET CURSOR TO FIRST                     FILE 20
                ;                   UNPROTECTED FIELD                      FILE 20
                ;                                                          FILE 20
                ;**********************************                        FILE 20
                ; CURPH - CURSOR POINTER HOME (UP) *                       FILE 20
                ;**********************************                        FILE 20
19A9            CURPH  EQU $                                               FILE 20
19A9   3EFE            MVI  A,377Q-SACOM   ;CLEAR DATACOM INPUT            FILE 20
19AB   CDE015          CALL CRDFL       ;FLAG TO DISABLE TRANSMIT-         FILE 20
                ;                        ONLY FIELDS                       FILE 20
                ;                                                          FILE 20
19AE            CRPH1  EQU  $                                              FILE 20
19AE   CD771E          CALL CRPRT     ;SET CURSOR TO LEFT MARGIN           FILE 20
19B1   CD8917          CALL CKSFK     ;SOFT KEY MODE?                      FILE 20
19B4   C2141A          JNZ  HP060     ;YES - SET CURSOR ONLY               FILE 20
19B7   32A3FF          STA  TLINO     ;NO - SET TOP LINE # TO ZERO         FILE 20
19BA   3D              DCR  A         ;RESET SPOW LATCH                    FILE 20
19BB   326CFF          STA  SPOWL                                          FILE 20
19BE   CD460B          CALL MKSCH     ;DISPLAY AREA LOCKED?                FILE 20
19C1   CA251A          JZ   HP100     ;NO - HOME TO FIRST LINE             FILE 20
                ;                                                          FILE 20
                ;  DISPLAY LOCK ON - CHANGE ONLY UNLOCKED LINES            FILE 20
                ;                                                          FILE 20
19C4   54              MOV  D,H       ;SAVE ADDRESS OF LSB PART OF         FILE 20
19C5   5D              MOV  E,L         ;NEXT LINE POINTER IN FIRS         FILE 20
19C6   23              INX  H           ;UNLOCKED LINE                     FILE 20
19C7   23              INX  H         ;GET ADDRESS OF LAST LOCKED          FILE 20
19C8   4E              MOV  C,M         ;ROW                               FILE 20
19C9   23              INX  H                                              FILE 20
19CA   46              MOV  B,M                                            FILE 20
19CB   2ACBFF          LHLD TPLIN     ;GET PTR TO TOP DSPLY LINE           FILE 20
19CE   23              INX  H         ;GET ADDRESS OF FIRST LINE           FILE 20
19CF   23              INX  H           ;ABOVE TOP DISPLAY LINE            FILE 20
19D0   7E              MOV  A,M                                            FILE 20
19D1   B7              ORA  A         ;ANY LINES ABOVE DISPLAY?            FILE 20
19D2   CAFF19          JZ   HP050     ;NO - POSITION CURSOR ONLY           FILE 20
                ;                                                          FILE 20
                ;                                                          FILE 20
                ;  LINK SPLIT PARTS TOGETHER                               FILE 20
                ;                                                          FILE 20
19D5   3600            MVI  M,0       ;ZERO PREV LINE PTR OF TOP L         FILE 20
19D7   23              INX  H                                              FILE 20
19D8   66              MOV  H,M       ;SET H,L TO FIRST LINE ABOVE         FILE 20
19D9   6F              MOV  L,A         ;DISPLAY                           FILE 20
19DA   1B              DCX  D         ;SET ITS NEXT LINE POINTER T         FILE 20
19DB   73              MOV  M,E         ;FIRST CHARACTER OF FIRST          FILE 20
19DC   23              INX  H         ;UNLOCKED LINE                       FILE 20
19DD   72              MOV  M,D                                            FILE 20
19DE   EB              XCHG           ;SET PREVIOUS LINE POINTER O         FILE 20
19DF   23              INX  H           ;FIRST UNLOCKED LINE TO            FILE 20
19E0   23              INX  H           ;FIRST LINE ABOVE DISPLAY          FILE 20
19E1   23              INX  H                                              FILE 20
19E2   77              MOV  M,A                                            FILE 20
19E3   23              INX  H                                              FILE 20
```

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                                                                      FILE 20
                                                                      FILE 20
                                                                      FILE 20
                                                                      FILE 20
                                                                      FILE 20
19E4  72              MOV  M,D                                        FILE 20
19E5  2A9FFF          LHLD FLINE     ;REPLACE CONTENTS OF FLINE       FILE 20
19E8  EB              XCHG             ;WITH VALUES FROM TOPLIN       FILE 20
19E9  2ACBFF          LHLD TPLIN                                      FILE 20
19EC  229FFF          SHLD FLINE                                      FILE 20
19EF  62              MOV  H,D       ;SET PREVIOUS LINE POINTER O     FILE 20
19F0  6B              MOV  L,E        ;CURRENT TOP LINE TO POINT      FILE 20
19F1  23              INX  H           ;TO LAST LOCKED ROW            FILE 20
19F2  23              INX  H                                          FILE 20
19F3  71              MOV  M,C                                        FILE 20
19F4  23              INX  H                                          FILE 20
19F5  70              MOV  M,B                                        FILE 20
19F6  60              MOV  H,B       ;SET H,L TO MSB PART OF NEXT     FILE 20
19F7  69              MOV  L,C         ;LINE POINTER IN LAST          FILE 20
19F8  23              INX  H           ;LOCKED ROW                    FILE 20
19F9  42              MOV  B,D       ;SET NEXT LINE POINTER TO        FILE 20
19FA  4B              MOV  C,E         ;POINT TO FIRST CHARACTER      FILE 20
19FB  0B              DCX  B           ;OF LINE POINTED BY FLINE      FILE 20
19FC  CD140F          CALL DSLNK                                      FILE 20
                ;                                                     FILE 20
                ;  DISPLAY SET FOR DISPLAY LOCK HOME - SET CURSOR     FILE 20
                ;                                                     FILE 20
19FF            HP050  EQU  $                                         FILE 20
19FF  CD8A0C          CALL RLUP3     ;SET "LSTLIN" AND "CURADR"       FILE 20
1A02  CD7817          CALL CKFMT     ;FORAMT MODE?                    FILE 20
1A05  EE08            XRI  FRMAT       ;(REVERSE RESULT OF TEST)      FILE 20
1A07  CA281A          JZ   HP110     ;YES - LOCATE FIRST FIELD        FILE 20
                ;                      STARTING IN LOCKED REGION      FILE 20
                ;                      (A = 0)                        FILE 20
1A0A  3A6BFF          LDA  MKROW     ;NO - SET CURSOR TO FIRST        FILE 20
1A0D  32C0FF          STA  CRROW       ;UNLOCKED ROW                  FILE 20
1A10  32C7FF          STA  LTROW                                      FILE 20
1A13  C9              RET            ;RETURN                          FILE 20
                ;                                                     FILE 20
                ;                                                     FILE 20
                ;  DEFINE SOFT KEYS HOME UP                           FILE 20
                ;                                                     FILE 20
1A14            HP060  EQU  $                                         FILE 20
1A14  AF              XRA  A         ;SET CURSOR ROW TO ZERO          FILE 20
1A15  32C0FF          STA  CRROW                                      FILE 20
1A18  32C7FF          STA  LTROW                                      FILE 20
1A1B  2AA6FF          LHLD STKYS     ;SET "CURADR" AND "LSTLIN"       FILE 20
1A1E  23              INX  H           ;TO FIRST SOFT KEY LINE        FILE 20
1A1F  CD8B0C          CALL RLUPC                                      FILE 20
1A22  C33B1A          JMP  FDSR1     ;LOCATE FIRST FIELD              FILE 20
                ;                                                     FILE 20
                ;  DISPLAY NOT LOCKED - SET TOPLIN TO FLINE           FILE 20
                ;                                                     FILE 20
1A25            HP100  EQU  $                                         FILE 20
1A25  3A6BFF          LDA  MKROW     ;SET CURSOR TO 1ST UNLK RW       FILE 20
1A28            HP110  EQU  $                                         FILE 20
1A28  32C0FF          STA  CRROW     ;SET NEW CURRENT ROW             FILE 20
1A2B  AF              XRA  A                                          FILE 20
1A2C  32C7FF          STA  LTROW     ;SET LAST ROW DONE TO ZERO       FILE 20
1A2F  57              MOV  D,A       ;SET D=0 TO FLAG TLINO UPDAT     FILE 20
1A30  219FFF          LXI  H,FLINE                                    FILE 20
1A33  7E              MOV  A,M       ;SET TOP LINE POINTER TO         FILE 20
1A34  CDA20C          CALL RLUP1       ;FIRST DISPLAY LINE            FILE 20
1A37  CD7317          CALL CKFMS     ;FORMAT/SOFT KEY DEFINE MODE     FILE 20
1A3A  C8              RZ             ;NO - RETURN                     FILE 20
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                      ;                    YES - FALL INTO "FLDSR1" TO      FILE 20
                      ;                      FIND FIRST UNPROTECTED         FILE 20
                      ;                      FIELD                          FILE 20
                      ;                                                     FILE 20
                      ;*****************************************            FILE 20
                      ; FLDSR - LOCATE THE NEXT UNPROTECTED FIELD *         FILE 20
                      ;*****************************************            FILE 20
                      ;                                                     FILE 20
                      ;  ENTRY:  DON'T CARE                                 FILE 20
                      ;                                                     FILE 20
                      ;  EXIT :  NZ - FIELD FOUND                           FILE 20
                      ;            D,E = ADDRESS OF "ENDPR"                 FILE 20
                      ;            CURADR,CURCOL,CURROW,LSTLIN,LSTCOL       FILE 20
                      ;              LSTROW UPDATE TO CORRESPOND TO         FILE 20
                      ;              FIELD FOUND                            FILE 20
                      ;          Z - FIELD NOT FOUND                        FILE 20
                      ;            ALL REGISTERS DESTROYED                  FILE 20
                      ;                                                     FILE 20
1A3B                  FDSR1  EQU  $         ;LOOK FOR NEXT UNPROTECT        FILE 20
1A3B   21DAFF                LXI  H,NWROW  ;INITIALIZE ROW COUNT            FILE 20
1A3E   3600                  MVI  M,0       ;TO ZERO                        FILE 20
1A40   2EC1                  MVI  L,CRCOL-BASE   ;GET CURRENT COLUMN        FILE 20
1A42   4E                    MOV  C,M              ;POSITION                FILE 20
1A43   C3641A                JMP FR100                                      FILE 20
1A46                  FLDSR  EQU $                                          FILE 20
1A46   AF                    XRA  A         ;ZERO NUMBER OF ROWS ROLLED     FILE 20
1A47   32DAFF                STA  NWROW                                     FILE 20
1A4A   CD0D07                CALL RADRB     ;DOES CURSOR ROW EXIST?         FILE 20
1A4D   FA6707                JM   ZETRN     ;NO - RETURN ZERO               FILE 20
1A50   4F                    MOV  C,A       ;YES - SAVE LAST COLUMN FOUN    FILE 20
1A51   CDDA0F                CALL CPROT     ;CURSOR IN PROTECTED FIELD?     FILE 20
1A54   CA641A                JZ   FR100     ;YES - LOOK FOR NEXT UNPROTC    FILE 20
                      ;****************************************             FILE 20
                      ; CURSOR IS IN UNPROTECTED FIELD           *          FILE 20
                      ; SEARCH FOR START OF NEXT PROTECTED FIELD *          FILE 20
                      ;****************************************             FILE 20
1A57                  FR080  EQU $                                          FILE 20
1A57   21C0C0                LXI  H,STPR*256+STPR                           FILE 20
1A5A   CD461B                CALL FDCU1     ;ANY MORE FIELDS IN LINE?       FILE 20
1A5D   CA6A1A                JZ   FR120     ;NO - GO TO NEXT LINE           FILE 20
                      ;*****************************************            FILE 20
                      ; ADVANCE CURSOR TO START OF PROTECTED FIELD *        FILE 20
                      ;*****************************************            FILE 20
1A60   3E50                  MVI A,MXCOL+1  ;COMPUTE NEW COLUMN             FILE 20
1A62   91                    SUB C                                          FILE 20
1A63   4F                    MOV C,A       ;SAVE COLUMN IN C                FILE 20
                      ;*********************************                    FILE 20
                      ; CURSOR IS IN PROTECTED FIELD     *                  FILE 20
                      ; SEARCH FOR NEXT UNPROTECTED FIELD *                 FILE 20
                      ; IN THIS LINE                     *                  FILE 20
                      ;*********************************                    FILE 20
1A64                  FR100  EQU $                                          FILE 20
1A64   CD3B1B                CALL FDCHU     ;ANY MORE FIELDS IN LINE?       FILE 20
1A67   C2A81A                JNZ  FR200     ;YES - SET CURSOR AND DISPLA    FILE 20
                      ;                                                     FILE 20
                      ;***********************                              FILE 20
                      ; NO MORE FIELDS IN LINE *                            FILE 20
                      ; MOVE TO NEXT LINE      *                            FILE 20
                      ;***********************                              FILE 20
1A6A                  FR120  EQU $                                          FILE 20
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1A6A   FEC4           CPI  SPFLG     ;NON-DISPLAYING TERMINATOR?       FILE 20
1A6C   CAA21A         JZ   FR140     ;YES - RETURN FAIL                FILE 20
1A6F   4C             MOV  C,H       ;NO - SAVE TERMINATOR CHAR        FILE 20
1A70   CD6517         CALL CAINO     ;GET NEXT BLOCK LINK              FILE 20
1A73   7E             MOV  A,M       ;GET NEXT LINE LINK'S MSB         FILE 20
1A74   2B             DCX  H                                           FILE 20
1A75   6E             MOV  L,M       ;PUT LSB INTO L-REGISTER          FILE 20
1A76   FECE           CPI  EOP       ;END OF DISPLAY FOUND?            FILE 20
1A78   CAA21A         JZ   FR140     ;YES - EXIT FIELD NOT FOUND       FILE 20
1A7B   67             MOV  H,A       ;NO - SAVE ADDRESS OF NEW         FILE 20
1A7C   2296FF         SHLD LKSAV       ;LINE                           FILE 20
1A7F   EB             XCHG                                             FILE 20
1A80   21DAFF         LXI  H,NWROW   ;INCREMENT ROW NUMBER             FILE 20
1A83   34             INR  M                                           FILE 20
1A84   AF             XRA  A                                           FILE 20
1A85   32C6FF         STA  LTDCD    ;CLEAR LAST DISPLAY CODE           FILE 20
1A88   329DFF         STA  TEMP                                        FILE 20
1A8B   79             MOV  A,C       ;GET LAST TERMINATOR CHAR         FILE 20
1A8C   0E00           MVI  C,0      ;SET COLUMN TO ZERO                FILE 20
1A8E   FEC0           CPI  STPR      ;LOOKING FOR START PROTECT?       FILE 20
1A90   C2641A         JNZ  FR100     ;NO - CONTINUE UNPROTECT FIN      FILE 20
              ;                       YES - SEE IF CONTINUE UNPROT     FILE 20
              ;***************************************                FILE 20
              ; SEARCH FOR PROTECTED FIELD            *                FILE 20
              ; CHECK FOR CONTINUED UNPROTECTED FIELD *                FILE 20
              ;***************************************                FILE 20
1A93   CD061B         CALL FDSR2     ;FIRST CHAR AN "ENDPR"            FILE 20
1A96   3A9DFF         LDA  TEMP        ;(SET NEW LSTDCD VALUE)         FILE 20
1A99   32C6FF         STA  LTDCD                                       FILE 20
1A9C   CA571A         JZ   FR080     ;YES - LOOK FOR START PROTEC      FILE 20
1A9F   C3641A         JMP  FR100     ;NO - LOOK FOR NEXT UNPROTEC      FILE 20
              ;********************************                       FILE 20
              ; SET LSTCOL PAST END OF LINE   *                       FILE 20
              ; TO CAUSE LINE TO BE RESCANNED *                       FILE 20
              ;********************************                       FILE 20
1AA2          FDSRX  EQU  $                                            FILE 20
1AA2          FR140  EQU  $          ;(Z TRUE)                         FILE 20
1AA2   21C8FF         LXI  H,LTCOL                                     FILE 20
1AA5   3650           MVI  M,MXCOL+1                                   FILE 20
1AA7   C9             RET            ;RETURN                           FILE 20
              ;                                                        FILE 20
              ;**************************                             FILE 20
              ; UNPROTECTED FIELD FOUND *                             FILE 20
              ; SET NEW CURSOR POSITION *                             FILE 20
              ;**************************                             FILE 20
1AA8          FR200  EQU $                                             FILE 20
1AA8   3E50           MVI A,MXCOL+1  ;COMPUTE NEW COLUMN               FILE 20
1AAA   91             SUB C                                            FILE 20
1AAB   CD7A1E         CALL CRET1     ;SET CURRENT CURSOR LOCATION      FILE 20
1AAE   32C8FF         STA  LTCOL       ;AND LAST CURSOR VALUE          FILE 20
1AB1   EB             XCHG           ;STORE NEW CURRENT ADDRESS        FILE 20
1AB2   22C3FF         SHLD CRADR                                       FILE 20
1AB5   22D5FF         SHLD LADDR     ;SAVE FIELD ADDRESS IN            FILE 20
              ;                        CASE ROLL UP NEEDED             FILE 20
1AB8   EB             XCHG           ;RESTORE D,E AND H,L              FILE 20
              ;*************************                              FILE 20
              ; COMPUTE NEW CURSOR ROW *                              FILE 20
              ;*************************                              FILE 20
1AB9   3ADAFF         LDA  NWROW     ;GET NEW ABSOLUTE ROW NUMBER      FILE 20
1ABC   B7             ORA A          ;HAS ROW CHANGED?                 FILE 20
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                                                                      FILE 20
                                                                      FILE 20
                                                                      FILE 20
                                                                      FILE 20
                                                                      FILE 20
 1ABD   CAFD1A          JZ   FR360     ;NO - RETURN                   FILE 20
 1AC0   21C0FF          LXI  H,CRROW   ;YES - CALCULATE NEW           FILE 20
 1AC3   86              ADD  M            ;ROW NUMBER                 FILE 20
 1AC4           FR240   EQU $                                         FILE 20
 1AC4   0E18            MVI C,MXROW+1  ;IS NEW ROW ON CURRENT PAGE?   FILE 20
 1AC6   B9              CMP C                                         FILE 20
 1AC7   DAE61A          JC   FR340     ;YES                           FILE 20
                ;                                                     FILE 20
                ;**************************************               FILE 20
                ; NEW CURSOR ROW IS ON NEW PAGE        *              FILE 20
                ; ROLL DISPLAY UP TO GET ROW ON SCREEN *              FILE 20
                ;**************************************               FILE 20
 1ACA   91              SUB  C         ;DECREMENT ROLL COUNT BY ONE   FILE 20
 1ACB   216BFF          LXI  H,MKROW   ;PAGE                          FILE 20
 1ACE   86              ADD  M         ;ADJUST FOR LOCKED DISPLAY     FILE 20
 1ACF   57              MOV  D,A       ;SAVE RESULT FOR STORAGE       FILE 20
 1AD0   79              MOV  A,C       ;COMPUTE NUMBER OF LINES TO    FILE 20
 1AD1   96              SUB  M            ;ROLL FOR ONE PAGE          FILE 20
 1AD2   5F              MOV  E,A       ;SAVE THE VALUE FOR STORAGE    FILE 20
 1AD3   EB              XCHG           ;PUT VALUES INTO H,L           FILE 20
 1AD4   2282FF          SHLD RLLCT   ;STORE ROLL PARAMETERS           FILE 20
                ;                                                     FILE 20
                ;  ROLL UP ONE PAGE OF LINES                          FILE 20
                ;                                                     FILE 20
 1AD7           FR300   EQU  $                                        FILE 20
 1AD7   CD5B0C          CALL RLLUP     ;ROLLUP ONE LINE               FILE 20
 1ADA   2182FF          LXI  H,RLLCT                                  FILE 20
 1ADD   35              DCR  M         ;PAGE ROLLED UP?               FILE 20
 1ADE   C2D71A          JNZ  FR300     ;NO - DO ANOTHER LINE          FILE 20
 1AE1   23              INX  H         ;YES - GET NUMBER OF ROWS      FILE 20
 1AE2   7E              MOV  A,M          ;TO UNPROTECTED FIELD AND   FILE 20
 1AE3   C3C41A          JMP  FR240        ;CHECK TO SEE IF ON SCREEN  FILE 20
                ;*************                                        FILE 20
                ; UPDATE ROW *                                        FILE 20
                ;*************                                        FILE 20
 1AE6           FR340   EQU  $                                        FILE 20
 1AE6   32C0FF          STA  CRROW     ;SET NEW ROW NUMBER            FILE 20
 1AE9   2AC0FF          LHLD CRROW     ;SET LAST ROW AND COLUMN DON   FILE 20
 1AEC   22C7FF          SHLD LTROW        ;CURRENT ROW AND COLUMN     FILE 20
 1AEF   2A96FF          LHLD LKSAV     ;SET "LSTLIN" TO CURRENT ROW   FILE 20
 1AF2   23              INX  H            ;ADDRESS                    FILE 20
 1AF3   22C9FF          SHLD LTLIN                                    FILE 20
 1AF6   2AD5FF          LHLD LADDR     ;SET "CURADR" TO ADDRESS OF    FILE 20
 1AF9   22C3FF          SHLD CRADR        ;FIRST CHAR IN NEW FIELD    FILE 20
 1AFC   EB              XCHG           ;PUT CURRENT ADDRESS INTO D,   FILE 20
 1AFD           FR360   EQU  $                                        FILE 20
 1AFD   FE02            CPI  D         ;SET Z-FALSE (D >= 320)        FILE 20
 1AFF   C31D0F          JMP  DSLN1     ;GO SET DISPLAY CURSOR ROW     FILE 20
                ;                                                     FILE 20
                ;                                                     FILE 20
                ; * * * * * * * * * * * * * * * * * * * * * * * * *   FILE 20
                ;                                                     FILE 20
                ;  FLDSR2 - DETERMINE PROTECT SENSE OF NEXT           FILE 20
                ;    CHARACTER                                        FILE 20
                ;                                                     FILE 20
                ;      ENTRY:  D,E = NEXT CHARACTER ADDRESS           FILE 20
                ;                                                     FILE 20
                ;      EXIT :  Z - CONTINUATION OF FORMAT FIELD       FILE 20
                ;             NZ - NOT A CONTINUATION                 FILE 20
                ;              D,E = ADDRESS OF CHARACTER             FILE 20
```

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                                                                FILE 20
                                                                FILE 20
                                                                FILE 20
                                                                FILE 20
                                                                FILE 20
                   ;          H = BASEH                         FILE 20
                   ;          TEMP = NEW ENHANCEMENT CODE IF ANY FILE 20
                   ;          A,L DESTROYED                     FILE 20
                   ;                                            FILE 20
1B02               F2000  EQU  $                                FILE 20
1B02    329DFF            STA  TEMP  ;STORE NEW DISPLAY CONTROL FILE 20
1B05               FDSRB  EQU  $                                FILE 20
1B05               F2005  EQU  $                                FILE 20
1B05    1B                DCX  D          ;SET ADDRESS TO NEXT CHAR  FILE 20
1B06               FDSR2  EQU $                                 FILE 20
1B06    13                INX  D          ;SET ADDRESS TO PREV CHAR  FILE 20
1B07    CDBB0B            CALL NTCHR   ;GET NEXT CHARACTER      FILE 20
1B0A    C2061B            JNZ FDSR2    ;SKIP OVER LINKS         FILE 20
1B0D    87                ADD  A          ;ASCII OR DISPLAY CONTROL?  FILE 20
1B0E    D2590B            JNC  NEXIT      ;ASCII - RETURN NOT CONTINUE  FILE 20
1B11    1F                RAR               ;(RESTORE DATA BYTE)  FILE 20
1B12    F2021B            JP   F2000      ;DISPLAY CONTROL - IGNORE IT  FILE 20
1B15    FEC4              CPI  SPFLG      ;TERMINATOR OR TYPE DEFINE?  FILE 20
1B17    F2051B            JP   F2005      ;YES - SKIP TO NEXT CHARACTE  FILE 20
1B1A    21C5FF            LXI  H,LTFMT    ;COMPARE AGAINST LAST FORMAT  FILE 20
1B1D    BE                CMP  M            ;CONTROL AND RETURN  FILE 20
1B1E    C9                RET                                   FILE 20
                   ;                                            FILE 20
                   ;                                            FILE 20
                   ; * * * * * * * * * * * * * * * * * * * * * * * * *  FILE 20
                   ;                                            FILE 20
                   ;  FNDCH - SEE IF NEXT CHAR IS FORMAT CONTROL BYTE  FILE 20
                   ;                                            FILE 20
                   ;      ENTRY:  TERMINAL IS IN FORMAT MODE    FILE 20
                   ;              D,E = START ADDRESS           FILE 20
                   ;              H,L = CHARACTERS TO LOOK FOR  FILE 20
                   ;                                            FILE 20
                   ;      EXIT :  Z - CHARACTER NOT FOUND       FILE 20
                   ;              NZ - CHARACTER FOUND          FILE 20
                   ;              D,E = ADDRESS OF ENDING CHARACTER  FILE 20
                   ;              A,B,C,L,TEMP DESTROYED        FILE 20
                   ;                                            FILE 20
                   ;  FNDCHO - SEE IF NEXT CHARACTER IS PROTECTED  FILE 20
                   ;                                            FILE 20
1B1F               FDCHO  EQU  $                                FILE 20
1B1F    21C0C0            LXI  H,STPR*256+STPR  ;SET COMPARE CHARS  FILE 20
1B22               FNDCH  EQU  $                                FILE 20
1B22    3E01              MVI  A,INTRM    ;SET TO IGNORE NON-DISPLAYIN  FILE 20
1B24    326DFF            STA  TMFCT        ;TERMINATOR         FILE 20
1B27    3AC2FF            LDA  POFLD      ;SAVE PROTECTED FIELD  FILE 20
1B2A    F5                PUSH PSW          ;STATUS             FILE 20
1B2B    0E00              MVI  C,0        ;SET FOR NEXT CHARACTER ONLY  FILE 20
1B2D    CD4A1B            CALL FR400      ;LOCATE THE NEXT CHARACTER  FILE 20
1B30    3E00              MVI  A,DLTRM    ;RESTORE FLAG TO DELETE NON-  FILE 20
1B32    326DFF            STA  TMFCT        ;DISPLAYING TERMINATOR  FILE 20
1B35    C1                POP  B          ;RESET PROTECT STATUS TO BE  FILE 20
1B36    78                MOV  A,B          ;CONSISTENT WITH CHARACTER  FILE 20
1B37    32C2FF            STA  POFLD        ;POINTED TO BY "CURADR"  FILE 20
1B3A    C9                RET             ;RETURN               FILE 20
                   ;                                            FILE 20
                   ;                                            FILE 20
                   ; * * * * * * * * * * * * * * * * * * * * * * * * *  FILE 20
                   ;                                            FILE 20
                   ;  FNDCHU - LOCATE NEXT UNPROTECTED FIELD    FILE 20
                   ;    CONTROL BYTE IN CURRENT LINE            FILE 20
```

```
                    ;                                                   FILE 20
                    ;      ENTRY:  TERMINAL IS IN FORMAT MODE           FILE 20
                    ;              B = DON'T CARE                       FILE 20
                    ;              C = CURRENT COLUMN NUMBER            FILE 20
                    ;              D,E = START ADDRESS                  FILE 20
                    ;                                                   FILE 20
                    ;      EXIT :  Z - CHARACTER NOT FOUND              FILE 20
                    ;              NZ - CHARACTER FOUND                 FILE 20
                    ;              C = NUMBER OF CHARS TO END OF LINE   FILE 20
                    ;              D,E = ADDRESS OF ENDING CHARACTER    FILE 20
                    ;              PROFLD SET AS DEFINED                FILE 20
                    ;              A,B,L DESTROYED                      FILE 20
                    ;                                                   FILE 20
1B3B                FDCHU   EQU  $                                      FILE 20
1B3B    CD1B12              CALL DXB2D    ;DATA COMM OR I/O BUFF INPUT  FILE 20
1B3E    21C1C1              LXI  H,ENDPR*256+ENDPR  ;(SET "ENDPR" ONLY) FILE 20
1B41    CA461B              JZ   FDCU1    ;NO - SKIP XMIT ONLY FIELDS   FILE 20
1B44    2EC2                MVI  L,XONLY  ;YES - LOOK FOR "XMONLY" ALS  FILE 20
                    ;                                                   FILE 20
                    ;  LOCATE THE FORMAT CONTROL CHARACTER              FILE 20
                    ;                                                   FILE 20
1B46                FDCU1   EQU  $                                      FILE 20
1B46    3E4F                MVI A,MXCOL  ;COMPUTE NO. OF CHARS          FILE 20
1B48    91                  SUB C        ;TO SEARCH                     FILE 20
1B49    4F                  MOV C,A                                     FILE 20
1B4A                FR400   EQU $                                       FILE 20
1B4A    CD511B              CALL FDCHR    ;LOOK FOR SPECIFIED CHARS     FILE 20
1B4D    C8                  RZ            ;RETURN IF EOL ENCOUNTERED    FILE 20
1B4E    AF                  XRA  A        ;OTHERWISE, SET FLAG TO       FILE 20
1B4F    B1                  ORA  C          ;SHOW IF CHARACTER FOUND    FILE 20
1B50    C9                  RET                                         FILE 20
                    ;                                                   FILE 20
                    ;*************************************              FILE 20
                    ; FNDCHR - LOCATE SPECIFIED CHARACTER *             FILE 20
                    ;*************************************              FILE 20
                    ;                                                   FILE 20
                    ;   ENTRY:  C = NUMBER OF COLUMNS TO SEARCH         FILE 20
                    ;           D,E = STARTING ADDRESS                  FILE 20
                    ;           H,L = CHARACTERS TO LOOK FOR            FILE 20
                    ;             (VALID FOR FORMAT MODE ONLY)          FILE 20
                    ;                                                   FILE 20
                    ;   EXIT :  Z - CHARACTER NOT FOUND                 FILE 20
                    ;           NZ - CHARACTER FOUND                    FILE 20
                    ;           C = NUMBER OF CHARACTERS LEFT           FILE 20
                    ;             (= 0, IF CHARACTER FOUND)             FILE 20
                    ;           D,E = ADDRESS OF TERMINATING CHARACTER  FILE 20
                    ;           "EOLMV" SET TO ZERO                     FILE 20
                    ;           "PROFLD" SET IF IN FORMAT MODE          FILE 20
                    ;           "LSTFMT" UPDATED IF A FORMAT CONTROL    FILE 20
                    ;             CHARACTER IS ENCOUNTERED              FILE 20
                    ;                                                   FILE 20
1B51                FDCHR   EQU  $                                      FILE 20
1B51    AF                  XRA  A                                      FILE 20
1B52    3290FF              STA  EOLMV                                  FILE 20
1B55    13                  INX  D        ;SET TO PREV CHAR ADDRESS     FILE 20
1B56    0C                  INR  C        ;ADJUST CHARACTER COUNT       FILE 20
1B57    0C                  INR  C                                      FILE 20
1B58                FR005   EQU  $                                      FILE 20
1B58    0D                  DCR  C        ;COLUMN FOUND?                FILE 20
1B59    CA590B              JZ   NEXIT    ;YES - RETURN CHARACTER FOUN  FILE 20
```

```
                         ;                                                   FILE 20
                         ;  SEARCH DISPLAY LIST                              FILE 20
                         ;                                                   FILE 20
1B5C                     FR010  EQU  $                                       FILE 20
1B5C    CDBB0B                  CALL NTCHR      ;GET THE NEXT CHARACTER      FILE 20
1B5F    C2D81B                  JNZ  FR260      ;EOL LINK - EXIT NOT FOUND   FILE 20
1B62    87                      ADD  A          ;IS IT ASCII?                FILE 20
1B63    D2581B                  JNC  FR005      ;YES - DECREMENT COLUMN COUN FILE 20
                         ;*********************************************     FILE 20
                         ; NON-ASCII CHARACTER - DETERMINE CHAR FUNCTION *   FILE 20
                         ;*********************************************     FILE 20
1B66    1F                      RAR             ;RESTORE CHARACTER           FILE 20
1B67    FA701B                  JM   FR105      ;NOT DISPLAY CTL - CHECK MOR FILE 20
1B6A    32C6FF                  STA  LTDCD      ;UPDATE CURRENT DISPLAY CODE FILE 20
1B6D    C35C1B                  JMP  FR010      ;CONTINUE SEARCHING          FILE 20
                         ;                                                   FILE 20
                         ;                                                   FILE 20
                         ;  FORMAT CONTROL CHARACTER - CHECK FOR ENDING      FILE 20
                         ;                                                   FILE 20
1B70                     FR105  EQU  $                                       FILE 20
1B70    FECC                    CPI  EOL        ;END OF LINE?                FILE 20
1B72    C8                      RZ              ;YES - RETURN                FILE 20
1B73    FECE                    CPI  EOP        ;END OF DISPLAY?             FILE 20
1B75    C8                      RZ              ;YES - RETURN                FILE 20
1B76    FEC4                    CPI  SPFLG      ;NON-DISPLAYING TERMINATOR?  FILE 20
1B78    CAC71B                  JZ   FR205      ;YES - DETERMINE ITS FUNCTIO FILE 20
1B7B    FEC5                    CPI  ALPHA      ;TYPE DEFINITION?            FILE 20
1B7D    F2A81B                  JP   FR150      ;YES - SET CHECK FUNCTION    FILE 20
1B80    FEC3                    CPI  XONLY+1    ;FORMAT CONTROL?             FILE 20
1B82    F25C1B                  JP   FR010      ;NO - CONTINUE SEARCHING     FILE 20
1B85    E5                      PUSH H          ;YES - RESET CHECK ROUTINE   FILE 20
1B86    216707                  LXI  H,ZETRN      ;ADDRESS                   FILE 20
1B89    2286FF                  SHLD CKRTN                                   FILE 20
1B8C    E1                      POP  H          ;RESTORE CHECK CHARACTERS    FILE 20
1B8D    32C5FF                  STA  LTFMT      ;SET CURRENT FORMAT CONTROL  FILE 20
1B90    47                      MOV  B,A        ;SAVE CONTROL CHARACTER      FILE 20
1B91    CD7317                  CALL CKFMS      ;FORMAT/SOFT KEY DEFINE MODE FILE 20
1B94    CA5C1B                  JZ   FR010      ;NO - CONTINUE SEARCHING     FILE 20
1B97    78                      MOV  A,B        ;RECALL CHARACTER            FILE 20
1B98    DEC1                    SBI  STPR+1     ;COMPUTE "PROFLD" VALUE      FILE 20
1B9A    32C2FF                  STA  POFLD        ;(= -1 FOR PROTECTED)      FILE 20
1B9D    78                      MOV  A,B        ;RECALL CHARACTER            FILE 20
1B9E    BC                      CMP  H          ;TERMINATOR FOUND?           FILE 20
1B9F    CAA61B                  JZ   FR110      ;YES - EXIT                  FILE 20
1BA2    BD                      CMP  L                                       FILE 20
1BA3    C25C1B                  JNZ  FR010      ;NO - CONTINUE SEARCHING     FILE 20
1BA6                     FR110  EQU  $                                       FILE 20
1BA6    B7                      ORA  A          ;SET Z FALSE                 FILE 20
1BA7    C9                      RET             ;RETURN                      FILE 20
                         ;                                                   FILE 20
                         ;  TYPE DEFINITION FOUND - SET CHECK ROUTINE        FILE 20
                         ;                                                   FILE 20
1BA8                     FR150  EQU  $                                       FILE 20
1BA8    E5                      PUSH H          ;SAVE TERMINATOR CHARACTERS  FILE 20
1BA9    212370                  LXI  H,ZLPCK    ;SET H,L FOR ALPHA CHECK     FILE 20
1BAC    CAC01B                  JZ   FR160      ;SET ALPHA CHECK IF ALPHA    FILE 20
1BAF    212670                  LXI  H,ZUMCK    ;SET H,L FOR NUMERIC CHECK   FILE 20
1BB2    D6C7                    SUI  NMBER+1    ;NUMERIC FIELD?              FILE 20
1BB4    FAC01B                  JM   FR160      ;YES - SET CHECK ROUTINE ADD FILE 20
1BB7    216707                  LXI  H,ZETRN    ;NO - SET H,L FOR ALPHANUM   FILE 20
```

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                                                                      FILE 20
                                                                      FILE 20
                                                                      FILE 20
                                                                      FILE 20
                                                                      FILE 20
1BBA    CAC01B          JZ   FR160     ;SET ROUTINE ADDR IF = ZERO    FILE 20
1BBD    21360F          LXI  H,SKCHK     ;ELSE, SET FOR SOFT KEYS     FILE 20
1BC0            FR160   EQU  $                                        FILE 20
1BC0    2286FF          SHLD CKRTN     ;SET CHECK ROUTINE ADDRESS     FILE 20
1BC3    E1              POP  H         ;RECALL TERMINATOR CHARACTER   FILE 20
1BC4    C35C1B          JMP  FR010     ;CONTINUE SEARCHING            FILE 20
                ;                                                     FILE 20
                ;*******************************************          FILE 20
                ; NON-DISPLAYING TERMINATOR FOUND - DETERMINE *       FILE 20
                ;   AND PERFORM ITS FUNCTION                  *       FILE 20
                ;*******************************************          FILE 20
1BC7            FR205   EQU  $                                        FILE 20
1BC7    3A6DFF          LDA  TMFCT     ;GET THE FUNCTION FLAG         FILE 20
1BCA    B7              ORA  A         ;WHAT FUNCTION?                FILE 20
1BCB    FAD71B          JM   FR250     ;-1 - TERMINATE TRANSFER       FILE 20
1BCE    C25C1B          JNZ  FR010     ;+1 - IGNORE IT                FILE 20
1BD1    CDB518          CALL CRDL2      ;0 - DELETE IT                FILE 20
1BD4    C35C1B          JMP  FR010     ;CONTINUE CHARACTER SEARCH     FILE 20
                ;                                                     FILE 20
                ;  TERMINATE TRANSFER                                 FILE 20
                ;                                                     FILE 20
1BD7            FR250   EQU  $                                        FILE 20
1BD7    1A              LDAX D         ;PUT CHARACTER BACK IN A-REG   FILE 20
1BD8            FR260   EQU  $                                        FILE 20
1BD8    BF              CMP  A         ;SET Z-FLAG TRUE               FILE 20
1BD9    C9              RET            ;RETURN CHARACTER NOT FOUND    FILE 20
                ;                                                     FILE 20
                ;*******************************************          FILE 20
                ; FNDLST - LOCATE LAST CHARACTER TYPE AHEAD OF *      FILE 20
                ;   CURRENT CHARACTER                          *      FILE 20
                ;*******************************************          FILE 20
                ;                                                     FILE 20
                ;  ENTRY:  A = NUMBER OF COLUMNS TO SEARCH            FILE 20
                ;          D,E = ADDRESS OF CHARACTER BEFORE          FILE 20
                ;            BEFORE FIRST CHARACTER TO LOOK AT        FILE 20
                ;          H,L = CHARACTERS TO BE FOUND               FILE 20
                ;                                                     FILE 20
                ;  EXIT :  P - CHARACTER FOUND                        FILE 20
                ;            B = NUMBER OF CHARACTERS FROM CURRENT    FILE 20
                ;              CHARACTER                              FILE 20
                ;          M - CHARACTER NOT FOUND                    FILE 20
                ;            B DESTROYED                              FILE 20
                ;          A,C,D,E DESTROYED                          FILE 20
                ;                                                     FILE 20
1BDA            FDLS0   EQU  $                                        FILE 20
1BDA    3C              INR  A          ;ADJUST SEARCH COUNT          FILE 20
1BDB    21CCCC          LXI  H,EOL*256+EOL  ;SET TO LOOK FOR "EOL"    FILE 20
                ;                                                     FILE 20
1BDE            FDLST   EQU  $                                        FILE 20
1BDE    4F              MOV  C,A       ;PUT SEARCH COUNT IN C-REG     FILE 20
1BDF    06FF            MVI  B,377Q    ;PRESET B FOR FAIL RETURN      FILE 20
1BE1    3D              DCR  A         ;ANY COLUMNS TO SEARCH?        FILE 20
1BE2    F8              RM             ;NO - RETURN NONE FOUND        FILE 20
1BE3            FS010   EQU  $                                        FILE 20
1BE3    CDBB0B          CALL NTCHR     ;GET THE NEXT CHARACTER        FILE 20
1BE6    BC              CMP  H         ;DOES IT MATCH DESIRED CHARS   FILE 20
1BE7    CAEE1B          JZ   FS020     ;YES - SAVE LOCATION OF CHAR   FILE 20
1BEA    BD              CMP  L                                        FILE 20
1BEB    C2EF1B          JNZ  FS030     ;NO - GO TO NEXT CHARACTER     FILE 20
1BEE            FS020   EQU  $                                        FILE 20
```

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                                                                          FILE 20
                                                                          FILE 20
                                                                          FILE 20
                                                                          FILE 20
                                                                          FILE 20
 1BEE   41                MOV  B,C         ;SAVE LOCATION OF CHAR IN B    FILE 20
 1BEF           FS030     EQU  $                                          FILE 20
 1BEF   B7                ORA  A           ;IS CURRENT CHAR ASCII?        FILE 20
 1BF0   FAFA1B            JM   FS050       ;NO - CHECK FOR TERMINATION    FILE 20
 1BF3   0D                DCR  C           ;SEARCH COMPLETE?              FILE 20
 1BF4           FS035     EQU  $                                          FILE 20
 1BF4   C2E31B            JNZ  FS010       ;NO - CHECK NEXT CHARACTER     FILE 20
 1BF7           FS040     EQU  $                                          FILE 20
 1BF7   AF                XRA  A           ;CLEAR A-REGISTER              FILE 20
 1BF8   B0                ORA  B           ;SET FLAGS FOR RETURN          FILE 20
 1BF9   C9                RET              ;RETURN                        FILE 20
                ;*******************************************              FILE 20
                ; NON-ASCII CHARACTER - CHECK FOR TERMINATION *           FILE 20
                ;*******************************************              FILE 20
 1BFA           FS050     EQU  $                                          FILE 20
 1BFA   FECC              CPI  EOL         ;IS IT AN EOL?                 FILE 20
 1BFC   CAF71B            JZ   FS040       ;YES - EXIT                    FILE 20
 1BFF   FECE              CPI  EOP         ;IS IT AN EOP?                 FILE 20
 1C01   C3F41B            JMP  FS035       ;GO CHECK RESULT               FILE 20
                ;                                                         FILE 20
                ;*********************************                        FILE 20
                ; HTAB - SKIP TO NEXT TAB POSITION *                      FILE 20
                ;*********************************                        FILE 20
 1C04           HTAB      EQU  $                                          FILE 20
 1C04   CD6F17            CALL CKFMO       ;FORMAT/SOFT KEY DEFINE MODE   FILE 20
 1C07   C2501C            JNZ  HB200       ;YES - LOCATE NEXT FIELD       FILE 20
 1C0A   2EC1              MVI  L,CRCOL-BASE   ;NO - LOCATE NEXT TAB       FILE 20
 1C0C   46                MOV  B,M            ;SET POSITION               FILE 20
 1C0D   04                INR  B           ;START FROM NEXT COLUMN        FILE 20
 1C0E   3E4F              MVI  A,MXCOL     ;COMPUTE NUMBER OF COLUMNS     FILE 20
 1C10   90                SUB  B              ;TO END OF LINE             FILE 20
 1C11   FA0D1D            JM   CRLF        ;GO TO START OF NEXT LINE IF   FILE 20
                ;                           ALREADY AT END OF LINE        FILE 20
 1C14   F607              ORI 7           ;MOVE TO COL CORRESP. TO        FILE 20
                ;                        START OF BYTE                    FILE 20
 1C16   4F                MOV C,A         ;SAVE IN C                      FILE 20
 1C17   78                MOV A,B                                         FILE 20
 1C18   CD6214            CALL FDTB1      ;GET TABLE ENTRY FOR COLUMN     FILE 20
 1C1B   3D                DCR  A          ;MASK OFF BITS FOR              FILE 20
 1C1C   2F                CMA                 ;PREVIOUS COLUMNS           FILE 20
 1C1D   A6                ANA M                                           FILE 20
                ;******************************                           FILE 20
                ; CHECK NEXT COLUMN FOR SET TAB *                         FILE 20
                ;******************************                           FILE 20
 1C1E           HB100     EQU $                                           FILE 20
 1C1E   0608              MVI B,8         ;GET BIT COUNT                  FILE 20
 1C20   CA431C            JZ   HB140      ;NO BITS SET IN BYTE            FILE 20
 1C23           HB120     EQU  $                                          FILE 20
 1C23   0F                RRC             ;TAB BIT SET?                   FILE 20
 1C24   D23F1C            JNC  HB130      ;NO - TRY NEXT COLUMN           FILE 20
                ;***************************                              FILE 20
                ; TAB IS SET - UPDATE CURCOL *                            FILE 20
                ;***************************                              FILE 20
 1C27           HB160     EQU  $                                          FILE 20
 1C27   5F                MOV  E,A        ;SAVE A-REGISTER                FILE 20
 1C28   3E56              MVI  A,MXCOL+7   ;COMPUTE COLUMN OF LOCATIO     FILE 20
 1C2A   91                SUB  C              ;OF TAB                     FILE 20
 1C2B   90                SUB  B                                          FILE 20
 1C2C   2296FF            SHLD LKSAV      ;SAVE CURRENT TABLE ADDRESS     FILE 20
 1C2F   2ABEFF            LHLD RTMGN      ;GET RIGHT AND LEFT MARGINS     FILE 20
```

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                                                                       FILE 20
                                                                       FILE 20
                                                                       FILE 20
                                                                       FILE 20
                                                                       FILE 20
1C32   BD              CMP  L          ;TAB BEYOND RIGHT MARGIN?        FILE 20
1C33   F20D1D          JP   CRLF       ;YES - DO CR, LF                 FILE 20
1C36   3C              INR  A          ;NO - ADJUST TO PROPER VALUE     FILE 20
1C37   BC              CMP  H          ;TAB BEYOND LEFT MARGIN?         FILE 20
1C38   D20D11          JNC  CRP04      ;YES - LOCATE TAB LOCATION       FILE 20
1C3B   7B              MOV  A,E        ;NO - RESTORE A-REGISTER         FILE 20
1C3C   2A96FF          LHLD LKSAV      ;RECALL TAB TABLE ADDRESS        FILE 20
               ;                        LOOK FOR ANOTHER TAB            FILE 20
               ;                                                        FILE 20
               ;************************************                     FILE 20
               ; TAB NOT FOUND - CHECK NEXT COLUMN *                     FILE 20
               ;************************************                     FILE 20
1C3F           HB130  EQU  $           ;NO - TRY NEXT COLUMN            FILE 20
1C3F   05             DCR  B           ;ALL BITS EXAMINED?              FILE 20
1C40   C2231C         JNZ  HB120       ;NO - LOOK TO NEXT BIT           FILE 20
               ;****************************                             FILE 20
               ; BYTE EXHAUSTED            *                             FILE 20
               ; MOVE TO NEXT TABTBL ENTRY *                             FILE 20
               ;****************************                             FILE 20
1C43           HB140  EQU $                                             FILE 20
1C43   79             MOV A,C          ;GET COLUMN COUNT                FILE 20
1C44   D608           SUI 8            ;DECREMENT                       FILE 20
1C46   FA0D1D         JM   CRLF          ;DO CR,LF IF REACHED END       FILE 20
1C49   4F             MOV C,A                                           FILE 20
1C4A   23             INX  H             ;GET NEXT BYTE FROM TABLE      FILE 20
1C4B   7E             MOV A,M                                           FILE 20
1C4C   B7             ORA A            ;SET FLAGS                       FILE 20
1C4D   C31E1C         JMP HB100                                         FILE 20
               ;                                                        FILE 20
               ;******************                                       FILE 20
               ; FORMAT MODE TAB *                                       FILE 20
               ;******************                                       FILE 20
1C50           HB200  EQU $                                             FILE 20
1C50   CD461A         CALL FLDSR       ;SEARCH FOR NEXT FIELD           FILE 20
1C53   C0             RNZ              ;RETURN IF FOUND                 FILE 20
1C54   C3AE19         JMP  CRPH1       ;HOME TO FIRST UNPROT. FIELD     FILE 20
               ;                                                        FILE 20
               ;                                                        FILE 20
               ; * * * * * * * * * * * * * * * * * * * * * * * * * *     FILE 20
               ;                                                        FILE 20
               ;  ICHON,ICHOFF - INSERT CHARACTER ON/OFF                FILE 20
               ;                                                        FILE 20
1C57           ICHON  EQU  $                                            FILE 20
1C57   0600           MVI  B,0         ;SET FOR NO BLINK                FILE 20
1C59           IH010  EQU  $                                            FILE 20
1C59   3E02           MVI  A,ISCHR     ;TURN ON INSERT CHARACTER        FILE 20
1C5B   C30E70         JMP  ZTMD1         ;LED AND EXIT                  FILE 20
               ;                                                        FILE 20
1C5E           IHOFF  EQU  $                                            FILE 20
1C5E   3EFD           MVI  A,377Q-ISWRP                                 FILE 20
1C60   CD5113         CALL CCMFL       ;CLEAR WRAP AROUND FLAG          FILE 20
1C63   3E02           MVI  A,ISCHR     ;TURN OFF INSERT CHARACTER       FILE 20
1C65   C31170         JMP  ZLMD1                                        FILE 20
               ;*************************************                    FILE 20
               ; IWRPON - INSERT WITH WRAPAROUND ON *                    FILE 20
               ;*************************************                    FILE 20
1C68           IRPON  EQU  $                                            FILE 20
1C68   3E02           MVI  A,ISWRP                                      FILE 20
1C6A   CD7513         CALL SCMFL       ;SET WRAP AROUND FLAG            FILE 20
1C6D   06FF           MVI  B,377Q      ;SET TO BLINK LED                FILE 20
```

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1C6F   C3591C         JMP  IH010     ;SET INSERT CHARACTER LED ON
                ;
                ;*****************************************
                ; BCKSPC - BACKSPACE ONE CHARACTER POSITION *
                ;*****************************************
1C72            BKSPC  EQU  $
1C72   2EC1           MVI  L,CRCOL-BASE
1C74   35             DCR  M         ;DECREMENT CURRENT COLUMN
1C75   F0             RP             ;RETURN IF NOT AT COLUMN ZER
1C76   34             INR  M         ;ELSE, RESTORE TO ZERO AND
1C77   C9             RET            ;RETURN
                ;
                ;
                ;********************************
                ; CURADV - CURSOR ADVANCE ROUTINE  *
                ; ADVANCES CURSOR TO NEXT POSITION *
                ; ON DISPLAY                       *
                ;********************************
1C78            CRAD2  EQU  $        ;ADVANCE CURSOR TWICE
1C78   CD7B1C         CALL CRADV     ;DO FIRST CURSOR ADVANCE
                ;                      THEN FALL IN TO DO NEXT
1C7B            CRADV  EQU $
1C7B   CDCA1C         CALL CURAD   ;ADVANCE CURSOR
1C7E   CD7317         CALL CKFMS     ;FORMAT/SOFT KEY DEFINE MODE
1C81   C8             RZ             ;NO - RETURN
                ;****************************************
                ; FORMAT MODE                            *
                ; CHECK FOR ADVANCE INTO PROTECTED FIELD *
                ;****************************************
1C82   3AC1FF         LDA  CRCOL     ;GET NEW CURRENT COLUMN
1C85   B7             ORA  A         ;DID CURSOR WRAP AROUND?
1C86   C29E1C         JNZ  CA040     ;NO - CHECK FOR PROTECTED FL
                ;********************************
                ; CURSOR WRAPPED AROUND           *
                ; SEE IF NEW LINE IS CONTINUATION *
                ; OF UNPROTECTED FIELD            *
                ;********************************
1C89   2AC9FF         LHLD LTLIN
1C8C   EB             XCHG           ;GET CURRENT LINE ADDR IN D,
1C8D   3A8AFF         LDA  FTCTL     ;RESET "LSTFMT" TO LAST
1C90   32C5FF         STA  LTFMT       ;FORMAT CONTROL IN LINE
1C93   CD051B         CALL FDSRB     ;CONTINUATION FIELD?
1C96   C2AF1C         JNZ  CA060     ;NO - TAB TO NEXT FIELD
                ;
                ;*******************
                ; RESET CURADV FLAG *
                ;*******************
1C99            CADV1  EQU $
1C99   AF             XRA  A
1C9A   3267FF         STA  CAFLG
1C9D   C9             RET
                ;
                ;***************************
                ; CURSOR DID NOT WRAP AROUND *
                ; SEE IF CURSOR ENTERED      *
                ;  PROTECTED FIELD           *
                ;***************************
1C9E            CA040  EQU  $
1C9E   2AC3FF         LHLD CRADR   ;GET THE CURRENT CHAR ADDR
1CA1   EB             XCHG           ;PUT IT INTO H,L
```

FILE 20

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                                                                   FILE 20
                                                                   FILE 20
                                                                   FILE 20
                                                                   FILE 20
                                                                   FILE 20
 1CA2    1B                 DCX  D          ;SET POINTER TO NEXT CHAR        FILE 20
 1CA3    2A86FF             LHLD CKRTN      ;SAVE THE CURRENT CHECK          FILE 20
 1CA6    E5                 PUSH H            ;ROUTINE ADDRESS               FILE 20
 1CA7    CD1F1B             CALL FDCHO      ;NEXT CHARACTER PROTECTED?       FILE 20
 1CAA    E1                 POP  H            ;(RESTORE CHECK ROUTINE        FILE 20
 1CAB    2286FF             SHLD CKRTN          ;ROUTINE ADDRESS)            FILE 20
 1CAE    C8                 RZ              ;NO - RETURN                     FILE 20
 1CAF               CA060   EQU $                                            FILE 20
 1CAF    CD991C             CALL CADV1   ;RESET CURADV FLAG                  FILE 20
 1CB2    CD1B12             CALL DXB2D      ;DATA COMM OR I/O BUFF CHAR?     FILE 20
 1CB5    21C2C1             LXI  H,ENDPR*256+XONLY   ;(SET DEFAULT)          FILE 20
 1CB8    C2BC1C             JNZ  CA070      ;YES - DON'T SOUND BELL          FILE 20
                    ;       CALL ZBELL      ;NO - SOUND BELL                 FILE 20
 1CBB    6C                 MOV  L,H        ;LOOK FOR "ENDPR" ONLY           FILE 20
 1CBC               CA070   EQU  $                                           FILE 20
 1CBC    CD221B             CALL FNDCH      ;NEXT CHARACTER UNPROTECTED      FILE 20
 1CBF    CC461A             CZ   FLDSR        ;OR ANOTHER FIELD EXIST?       FILE 20
 1CC2    C0                 RNZ             ;YES - RETURN                    FILE 20
 1CC3    CD1B12             CALL DXB2D      ;DATA FROM DATA COMM OR CTU?     FILE 20
 1CC6    C8                 RZ              ;NO, FROM KEYBOARD - RETURN      FILE 20
 1CC7    C3AE19             JMP  CRPH1      ;YES - HOME THE CURSOR           FILE 20
                    ;                                                        FILE 20
                    ;************************                                FILE 20
                    ; CRADV - ADVANCE CURSOR *                               FILE 20
                    ;************************                                FILE 20
 1CCA               CURAD   EQU $                                            FILE 20
 1CCA    3ABEFF             LDA  RTMGN      ;GET RIGHT MARGIN SETTING        FILE 20
 1CCD    21C1FF             LXI  H,CRCOL                                     FILE 20
 1CD0               CU010   EQU  $                                           FILE 20
 1CD0    BE                 CMP  M          ;CURSOR AT RIGHT MARGIN?         FILE 20
 1CD1    CAEA1C             JZ   CA100      ;YES - CHECK FOR WRAP AROUND     FILE 20
 1CD4    3E4F               MVI  A,MXCOL      ;(SET FOR LAST COL CHECK)      FILE 20
 1CD6    FAD01C             JM   CU010      ;AFTER MARGIN - CHECK EOL        FILE 20
 1CD9    34                 INR  M          ;ADVANCE CURSOR                  FILE 20
 1CDA    BE                 CMP  M          ;MOVED INTO RIGHT MARGIN OR      FILE 20
 1CDB    C4DA0F             CNZ  CPROT        ;INTO PROTECTED FIELD?         FILE 20
 1CDE    C8                 RZ              ;YES - DON'T SET CURADV FLAG     FILE 20
 1CDF    3AF4FF             LDA  MFLG1      ;GET TERMINAL MODE FLAGS         FILE 20
 1CE2    E602               ANI  ISCHR      ;IN CHARACTER INSERT MODE?       FILE 20
 1CE4    C0                 RNZ             ;YES - DON'T SET FLAG            FILE 20
 1CE5    2E67               MVI  L,CAFLG-BASE   ;NO - SET CURADV FLAG        FILE 20
 1CE7    3601               MVI M,1                                          FILE 20
 1CE9    C9                 RET                                              FILE 20
                    ;**********************************                      FILE 20
                    ; CURSOR IS IN LAST COLUMN OF LINE *                     FILE 20
                    ;**********************************                      FILE 20
 1CEA               CA100   EQU  $                                           FILE 20   Bei Datacomm   STC
 1CEA    CD0C50             CALL BY100      ;EXECUTE GANZWORTREGEL           FILE 20
 1CED    D0                 RNC             ;CARRY SET ? NO = RETURN         FILE 20
 1CEE    3AC5FF             LDA  LTFMT      ;SAVE LAST FORMAT CONTROL        FILE 20
 1CF1    328AFF             STA  FTCTL        ;IN CURRENT LINE               FILE 20
 1CF4    CD7317             CALL CKFMS      ;FORMAT/SOFT KEY DEFINE OR       FILE 20
 1CF7    CCBC0F             CZ   CDSPF        ;DISPLAY FUNCTIONS ENABLED     FILE 20
 1CFA    C20D1D             JNZ  CRLF       ;YES - DON'T CLEAR WRAP FLAG     FILE 20
 1CFD    3AFBFF             LDA  KJMPR      ;NO - GET KEYBOARD JUMPERS 1     FILE 20
 1D00    E604               ANI  LNWRP      ;WRAP AROUND ENABLED?            FILE 20
 1D02    C0                 RNZ             ;NO - RETURN                     FILE 20
 1D03    3A6EFF             LDA  DFLGS      ;YES - GET DATA TRANSFER FLG     FILE 20
 1D06    E680               ANI  XF2DS      ;I/O BUFFER TO DISPLAY?          FILE 20
 1D08    3EBF               MVI  A,377Q-WPFLG   ;(SET CLEAR MASK)            FILE 20
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                                                                      FILE 20
                                                                      FILE 20
                                                                      FILE 20
                                                                      FILE 20
                                                                      FILE 20
 1D0A   C41E05           CNZ  CRMF2     ;YES - CLEAR LINE WRAP FLAG   FILE 20
                ;****************************************             FILE 20
                ; CURSOR SHOULD BE WRAPPED INTO NEXT LINE *           FILE 20
                ; GENERATE CR,LF                          *           FILE 20
                ;****************************************             FILE 20
 1D0D           CRLF     EQU $                                        FILE 20
 1D0D   CD6A1E           CALL CRRET     ;CARRIAGE RETURN              FILE 20
 1D10   C3C70A           JMP LFEED      ;LINE FEED                    FILE 20
                ;                                                     FILE 20
                ;                                                     FILE 20
                ;                                                     FILE 20
 1D13           CURPR    EQU  $         ;CURSOR POINTER RIGHT         FILE 20
 1D13   3E01             MVI  A,1                                     FILE 20
 1D15   C31A1D           JMP  CRPL1                                   FILE 20
 1D18           CURPL    EQU  $         ;CURSOR POINTER LEFT          FILE 20
 1D18   3EFF             MVI  A,-1                                    FILE 20
 1D1A           CRPL1    EQU  $                                       FILE 20
 1D1A   2EC1             MVI  L,CRCOL                                 FILE 20
 1D1C   86               ADD  M                                       FILE 20
 1D1D   77               MOV  M,A                                     FILE 20
 1D1E   FA511D           JM   CRPL2     ;WRAP TO LEFT                 FILE 20
 1D21   D650             SUI  MXCOL+1   ;WRAP TO RIGHT                FILE 20
 1D23   C0               RNZ            ;NO RET                       FILE 20
 1D24   77               MOV  M,A       ;YES COLUMN TO ZERO           FILE 20
 1D25           CURPD    EQU  $         ;CURSOR DOWN WITH ROLL UP     FILE 20
 1D25   3E01             MVI  A,1                                     FILE 20
 1D27   2EC0             MVI  L,CRROW                                 FILE 20
 1D29   86               ADD  M                                       FILE 20
 1D2A   77               MOV  M,A                                     FILE 20
 1D2B   D618             SUI  MXROW+1                                 FILE 20
 1D2D   CA331D           JZ   CUPD1     ;MXROW  +  1                  FILE 20
 1D30   F6FF             ORI  377Q                                    FILE 20
 1D32   C9               RET                                          FILE 20
 1D33           CUPD1    EQU  $                                       FILE 20
 1D33   3E17             MVI  A,MXROW                                 FILE 20
 1D35   77               MOV  M,A                                     FILE 20
 1D36   2AC9FF           LHLD LTLIN                                   FILE 20
 1D39   7E               MOV  A,M       ;NEXT ROW                     FILE 20
 1D3A   B7               ORA  A                                       FILE 20
 1D3B   C8               RZ             ;NO                           FILE 20
 1D3C   CD5B0C           CALL RLLUP     ;YES                          FILE 20
 1D3F   2AC9FF           LHLD LTLIN                                   FILE 20
 1D42   7E               MOV  A,M                                     FILE 20
 1D43   B7               ORA  A                                       FILE 20
 1D44   C8               RZ                                           FILE 20
 1D45   5F               MOV  E,A                                     FILE 20
 1D46   1C               INR  E                                       FILE 20
 1D47   CD880C           CALL RLUP2                                   FILE 20
 1D4A   21C7FF           LXI  H,LTROW                                 FILE 20
 1D4D   34               INR  M                                       FILE 20
 1D4E   F6FF             ORI  377Q                                    FILE 20
 1D50   C9               RET                                          FILE 20
                ;                                                     FILE 20
                ;                                                     FILE 20
 1D51           CRPL2    EQU  $                                       FILE 20
 1D51   364F             MVI  M,MXCOL   ;CURSOR AT LAST COLUMN        FILE 20
 1D53           CURPU    EQU  $         ;CURSOR  UP WITH ROLL DOWN    FILE 20
 1D53   3E17             MVI  A,MXROW                                 FILE 20
 1D55   2EC0             MVI  L,CRROW                                 FILE 20
 1D57   86               ADD  M                                       FILE 20
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                                                                FILE 20
                                                                FILE 20
                                                                FILE 20
                                                                FILE 20
                                                                FILE 20
 1D58   77              MOV  M,A                                FILE 20
 1D59   D618            SUI  MXROW+1                            FILE 20
 1D5B   FA621D          JM   CUPU1                              FILE 20
 1D5E   77              MOV  M,A                                FILE 20
 1D5F   F6FF            ORI  377Q                               FILE 20
 1D61   C9              RET                                     FILE 20
 1D62          CUPU1    EQU  $                                  FILE 20
 1D62   AF              XRA  A                                  FILE 20
 1D63   77              MOV  M,A                                FILE 20
 1D64   CDF90B          CALL RLLDN                              FILE 20
 1D67   CA6B1D          JZ   CUPU2       ;FIRST LINE            FILE 20
 1D6A   C0              RNZ              ;NO                    FILE 20
               ;                                                FILE 20
 1D6B          CUPU2    EQU  $                                  FILE 20
 1D6B   AF              XRA  A                                  FILE 20
 1D6C   32C1FF          STA  CRCOL                              FILE 20
 1D6F   F600            ORI  0B                                 FILE 20
 1D71   C9              RET                                     FILE 20
               ;                                                FILE 20
               ;                                                FILE 20
               ;****************************                     FILE 20
               ; DFSFKY - DEFINE SOFT KEYS *                    FILE 20
               ;****************************                     FILE 20
 1D72          DSFKY    EQU  $                                  FILE 20
 1D72   2ED9            MVI  L,SRNRW   ;CLEAR SOFT KEY PARAMETERS       FILE 20
 1D74   1E03            MVI  E,3         ;TO ZERO                       FILE 20
 1D76   CD7410          CALL CRAL1                                      FILE 20
 1D79   21FF24          LXI  H,DSTAB   ;SET RANGE TABLE FOR SOFT KE     FILE 20
 1D7C   C3F304          JMP  ECAPA       ;DEFINITION ESCAPE SEQUENC     FILE 20
               ;                                                FILE 20
               ;  A - DEFINE ATTRIBUTE CODE                     FILE 20
               ;                                                FILE 20
               ;     0 = NORMAL                                 FILE 20
               ;     1 = LOCAL ONLY                             FILE 20
               ;     2 = TRANSMIT ONLY                          FILE 20
               ;                                                FILE 20
 1D7F          DF100    EQU  $                                  FILE 20
 1D7F   0E02            MVI  C,2       ;SET MAXIMUM VALUE AND   FILE 20
 1D81   11DAFF          LXI  D,PARM2     ;PARAMETER TO BE SET   FILE 20
 1D84   C3A41D          JMP  DF220     ;SET PARAMETER AND EXIT  FILE 20
               ;                                                FILE 20
               ;  K - KEY NUMBER TO BE DEFINED                  FILE 20
               ;                                                FILE 20
 1D87          DS110    EQU  $                                  FILE 20
 1D87   0E07            MVI  C,NFCTK-1   ;SET MAXIMUM VALUE AND FILE 20
 1D89   11D9FF          LXI  D,PARM3     ;PARAMETER TO BE SET   FILE 20
 1D8C   C3941D          JMP  DF200     ;SET PARAMETER AND EXIT  FILE 20
               ;                                                FILE 20
               ;  L - SET LENGTH OF INPUT                       FILE 20
               ;                                                FILE 20
 1D8F          DF120    EQU  $                                  FILE 20
 1D8F   0E4F            MVI  C,MXCOL   ;SET MAXIMUM VALUE AND   FILE 20
 1D91   11DBFF          LXI  D,PARM1                            FILE 20
               ;                       FALL INTO EVALUATION ROUTINE     FILE 20
               ;                                                FILE 20
               ;                                                FILE 20
               ;  EVALUATE AND SET PARAMETER                    FILE 20
               ;                                                FILE 20
               ;     D = MAXIMUM ALLOWABLE VALUE                FILE 20
               ;     E = LSB OF PARAMETER TO BE SET (MSB = BASEH)       FILE 20
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                                                                        FILE 20
                                                                        FILE 20
                                                                        FILE 20
                                                                        FILE 20
                                                                        FILE 20
                          ;                                             FILE 20
 1D94                DF200  EQU  $          ;ENTRY FOR MIN VALUE = 1    FILE 20
 1D94   2ADEFF              LHLD IDATA      ;GET INPUT PARAMETER        FILE 20
 1D97   2B                  DCX  H          ;ADJUST PARAMETER TO ONE LES FILE 20
 1D98   7C                  MOV  A,H        ;CHECK FOR ZERO PARAMETER   FILE 20
 1D99   BD                  CMP  L          ;DOES MSB=LSB?              FILE 20
 1D9A   C2A11D              JNZ  DF210      ;NO - STORE ADJUST VALUE    FILE 20
 1D9D   3C                  INR  A          ;IS ADJUST VALUE -1         FILE 20
 1D9E   CAA41D              JZ   DF220      ;YES - DON'T STORE NEW VALUE FILE 20
 1DA1                DF210  EQU  $          ;NO - STORE ADJUSTED VALUE  FILE 20
 1DA1   22DEFF              SHLD IDATA                                  FILE 20
 1DA4                DF220  EQU  $                                      FILE 20
 1DA4   CD860F              CALL CKLIO      ;EVALUATE AND SET PARAMETERS FILE 20
 1DA7   3A88FF              LDA  CHAR       ;RECALL INPUT CHARACTER     FILE 20
 1DAA   E620                ANI  40Q        ;IS IT UPPER CASE?          FILE 20
 1DAC   C2FB04              JNZ  ECAPB      ;NO - CONTINUE ESCAPE SEQ   FILE 20
                     ;                      YES - SET NEW DEFINITION    FILE 20
                     ;                                                  FILE 20
                     ;********************************************      FILE 20
                     ; UPPER CASE CHARACTER INPUT - EVALUATE SEQUENCE * FILE 20
                     ;********************************************      FILE 20
 1DAF   CD8917              CALL CKSFK      ;SOFT KEY DEFINE MODE?      FILE 20
 1DB2   CC1B1E              CZ   SWAP       ;NO - SET TO SOFT KEY DISPLA FILE 20
 1DB5   3AD9FF              LDA  PARM3      ;COMPUTE DESIRED KEY DATA RO FILE 20
 1DB8   87                  ADD  A                                      FILE 20
 1DB9   3C                  INR  A            ;= 2*(KEY NUMBER) + 1     FILE 20
 1DBA   32C0FF              STA  CRROW                                  FILE 20
 1DBD   21A6FF              LXI  H,STKYS    ;LOCATE THE START OF THE    FILE 20
 1DC0   CD4E0B              CALL MKSC1        ;DATA ROW                 FILE 20
 1DC3   3E50                MVI  A,MXCOL+1                              FILE 20
 1DC5   CDDA1B              CALL FDLSO      ;LOCATE THE END OF THE DATA FILE 20
 1DC8   3E51                MVI  A,MXCOL+2    ;ROW + 1                  FILE 20
 1DCA   90                  SUB  B                                      FILE 20
 1DCB   32D9FF              STA  PARM3      ;SAVE END COLUMN NUMBER     FILE 20
 1DCE   3ADBFF              LDA  PARM1      ;TRY TO EXTEND LINE TO      FILE 20
 1DD1   32C1FF              STA  CRCOL        ;END OF NEW DATA LINE     FILE 20
 1DD4   CDDF1F              CALL DPASC      ;TRY TO ALLOCATE LINE NEEDED FILE 20
 1DD7   B7                  ORA  A          ;COLUMN POSITION ALLOCATED? FILE 20
 1DD8   CA0C1E              JZ   DS250      ;NO - DON'T SET NEW VALUE   FILE 20
 1DDB   2AC3FF              LHLD CRADR      ;YES - GET ADDRESS OF       FILE 20
 1DDE   CDBA0B              CALL NTCHO        ;END OF NEW DATA LINE     FILE 20
 1DE1   3AC1FF              LDA  CRCOL      ;GET NUMBER OF DATA CHARS   FILE 20
 1DE4   FE4F                CPI  MXCOL      ;FULL LINE USED?            FILE 20
 1DE6   C4D618              CNZ  CERLA      ;NO - CLEAR EXCESS CHARACTER FILE 20
 1DE9   CD771E              CALL CRPRT      ;SET CURRENT COLUMN TO ZERO FILE 20
 1DEC   21C0FF              LXI  H,CRROW    ;SET FOR ATTRIBUTE ROW      FILE 20
 1DEF   35                  DCR  M                                      FILE 20
 1DF0   3ADAFF              LDA  PARM2      ;GET ATTRIBUTE PARAMETER    FILE 20
 1DF3   3D                  DCR  A          ;WHICH ATTRIBUTE TO SET?    FILE 20
 1DF4   3E4E                MVI  A,NX         ;(N = NORMAL)             FILE 20
 1DF6   FA001E              JM   DS230      ;0 - SET AS NORMAL KEY      FILE 20
 1DF9   3E4C                MVI  A,LX         ;(L = LOCAL ONLY)         FILE 20
 1DFB   CA001E              JZ   DS230      ;1 - SET FOR LOCAL ONLY     FILE 20
 1DFE   3E54                MVI  A,TX       ;2 - SET FOR TRANSMIT ONLY  FILE 20
 1E00                DS230  EQU  $                                      FILE 20
 1E00   CD5120              CALL DPTST      ;STORE ATTRIBUTE LETTER     FILE 20
 1E03   CD151E              CALL SWAPO      ;RESTORE ACTIVE DISPLAY     FILE 20
 1E06   211F25              LXI  H,DSTB2    ;SET RANGE TABLE FOR SOFT   FILE 20
 1E09   C3F304              JMP  ECAPA        ;KEY DATA ACCUMULATION    FILE 20
                     ;                                                  FILE 20
```

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                                                                               FILE 20
                                                                               FILE 20
                                                                               FILE 20
                                                                               FILE 20
                                                                               FILE 20
                      ;*********************************************           FILE 20
                      ; NOT ENOUGH BLOCKS AVAILABLE FOR SOFT KEY DATA *         FILE 20
                      ;   RESTORE OLD STATE AND IGNORE DEFINITION     *         FILE 20
                      ;*********************************************           FILE 20
 1E0C                 DS250  EQU  $                                            FILE 20
 1E0C    3AD9FF              LDA  PARM3     ;RECALL END OF DATA LINE           FILE 20
 1E0F    32C1FF              STA  CRCOL                                         FILE 20
 1E12    CDBE18              CALL CEARL     ;CLEAR ANY ADDED CHARACTERS        FILE 20
                      ;*******************************************             FILE 20
                      ; SWAP - SWAP DISPLAY PARAMETERS BETWEEN SOFT *           FILE 20
                      ;   KEY AND NORMAL DISPLAY                    *           FILE 20
                      ;*******************************************             FILE 20
                      ;                                                        FILE 20
                      ;  ENTRY:  DON'T CARE                                    FILE 20
                      ;                                                        FILE 20
                      ;  EXIT :  DISPLAY PARAMTERS EXCHANGED                   FILE 20
                      ;          ALL REGISTERS DESTROYED                       FILE 20
                      ;                                                        FILE 20
 1E15                 SWAP0  EQU  $                                            FILE 20
 1E15    3AF8FF              LDA  CFLGS     ;GET COMMON FLAGS                  FILE 20
 1E18    E608                ANI  DFSKY     ;DEFINE SOFT KEY MODE?             FILE 20
 1E1A    C0                  RNZ            ;NO - DON'T DO SWAP                FILE 20
                      ;                                                        FILE 20
 1E1B                 SWAP   EQU  $                                            FILE 20
 1E1B    21AEFF              LXI  H,DPTYP   ;SET DISPLAY TYPE FLAG             FILE 20
 1E1E    7E                  MOV  A,M         ;TO VALUE FOR DISPLAY TO         FILE 20
 1E1F    2F                  CMA              ;MADE ACTIVE                     FILE 20
 1E20    77                  MOV  M,A                                          FILE 20
 1E21                 SWAP1  EQU  $                                            FILE 20
 1E21    0E0F                MVI  C,NMSWP   ;SET SWAP COUNT                    FILE 20
 1E23    11AFFF              LXI  D,SPSTR   ;SET ADDRESS OF LOCATIONS          FILE 20
 1E26    21BEFF              LXI  H,RTMGN     ;TO BE EXCHANGED                 FILE 20
                      ;                                                        FILE 20
                      ;  EXCHANGE DISPLAY PARAMETERS                           FILE 20
                      ;                                                        FILE 20
 1E29                 SP010  EQU  $                                            FILE 20
 1E29    46                  MOV  B,M       ;GET CURRENT SETTING               FILE 20
 1E2A    1A                  LDAX D         ;GET STORED SETTING                FILE 20
 1E2B    EB                  XCHG           ;EXCHANGE ADDRESSES                FILE 20
 1E2C    70                  MOV  M,B       ;STORE NEW SAVE VALUE              FILE 20
 1E2D    12                  STAX D         ;STORE NEW CURRENT VALUE           FILE 20
 1E2E    EB                  XCHG           ;RESTORE ADDRESSES                 FILE 20
 1E2F    13                  INX  D         ;INCREMENT TO NEXT VALUE           FILE 20
 1E30    23                  INX  H                                            FILE 20
 1E31    0D                  DCR  C         ;ALL VALUES EXCHANGED?             FILE 20
 1E32    C2291E              JNZ  SP010     ;NO - MOVE NEXT VALUE              FILE 20
 1E35    C9                  RET            ;YES - RETURN                      FILE 20
                      ;                                                        FILE 20
                      ;*******************                                     FILE 20
                      ; SET SOFT KEY DATA *                                    FILE 20
                      ;*******************                                     FILE 20
 1E36                 DS300  EQU  $                                            FILE 20
 1E36    CD8917              CALL CKSFK     ;SOFT KEY ALREADY ENABLED?         FILE 20
 1E39    CC1B1E              CZ   SWAP      ;NO - SET SOFT KEY DISPLAY O       FILE 20
 1E3C    21F4FF              LXI  H,MFLG1   ;GET SOFT MODE FLAGS               FILE 20
 1E3F    7E                  MOV  A,M                                          FILE 20
 1E40    F5                  PUSH PSW       ;SAVE SOFT MODE FLAGS              FILE 20
 1E41    3600                MVI  M,0       ;FORCE INSERT CHARACTER OFF        FILE 20
 1E43    CD2B14              CALL FESC1     ;ADD INPUT TO DEFINITION           FILE 20
 1E46    F1                  POP  PSW       ;RECALL SOFT MODE FLAGS            FILE 20
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 1E47    32F4FF          STA  MFLG1      ;RESTORE ORIGINAL VALUES               FILE 20
 1E4A    CD151E          CALL SWAPO      ;RESTORE ACTIVE DISPLAY                FILE 20
 1E4D    CDA405          CALL GTDC1      ;SET DISPLAY CURSOR                    FILE 20
 1E50    21DBFF          LXI  H,NWCOL                                           FILE 20
 1E53    35              DCR  M          ;ALL CHARACTERS DONE?                  FILE 20
 1E54    F20305          JP   ECAP1      ;NO - CONTINUE ESC SEQUENCE            FILE 20
 1E57    21A323          LXI  H,DSTB3    ;YES - SET TO WAIT FOR ANY             FILE 20
 1E5A    C3F304          JMP  ECAPA        ;CHAR EXCEPT CR, LF, OR DC           FILE 20
                 ;*******************************************                    FILE 20
                 ; WAIT FOR CHARACTER TO RESTORE NORMAL MODE *                  FILE 20
                 ;*******************************************                    FILE 20
 1E5D            DS350  EQU  $           ;LINE FEED CODE                        FILE 20
 1E5D    CD1B12          CALL DXB2D      ;DATA FROM KEYBOARD?                   FILE 20
 1E60    CAC70A          JZ   LFEED      ;YES - DO LINE FEED                    FILE 20
 1E63    C9              RET             ;NO - RETURN TO RE-ENABLE AL           FILE 20
                 ;                         CODES BY CALL TO "ESCEND"            FILE 20
                 ;                         IN "CHINT" CLEAN-UP                  FILE 20
                 ;                                                              FILE 20
 1E64            DS360  EQU  $           ;RETURN CODE                           FILE 20
 1E64    CD1B12          CALL DXB2D      ;DATA FROM KEYBOARD                    FILE 20
 1E67    C20305          JNZ  ECAP1      ;NO - CONTINUE WAITING                 FILE 20
                 ;                       YES - DO RETURN OPERATION              FILE 20
                 ;                       YES - DO RETURN OPERATION              FILE 20
                 ;*********************************                              FILE 20
                 ; CRRET - SET CURSOR TO LEFT MARGIN *                          FILE 20
                 ;*********************************                              FILE 20
                 ;                                                              FILE 20
                 ;  ENTRY:  DON'T CARE                                          FILE 20
                 ;                                                              FILE 20
                 ;  EXIT :  A,CURCOL = LEFT MARGIN SETTING                      FILE 20
                 ;          IF SPOW NOT DISABLED, SPOW SET                      FILE 20
                 ;                                                              FILE 20
 1E6A            CRRET  EQU  $                                                  FILE 20
 1E6A    3AFBFF          LDA  KJMPR      ;GET STRAP SETTINGS                    FILE 20
 1E6D    E602            ANI  SLDIS      ;SPOW DISABLED?                        FILE 20
 1E6F    CA771E          JZ   CRPRT      ;YES - RETURN CURSOR ONLY              FILE 20
 1E72    216CFF          LXI  H,SPOWL    ;NO - SET SPOW LATCH                   FILE 20
 1E75    3620            MVI  M,SOWON                                           FILE 20
 1E77            CRPRT  EQU  $                                                  FILE 20
 1E77    3ABFFF          LDA  LTMGN      ;SET CURSOR TO LEFT MARGIN             FILE 20
 1E7A            CRET1  EQU  $                                                  FILE 20
 1E7A    32C1FF          STA  CRCOL      ;UPDATE CURRENT COLUMN NUMBE           FILE 20
 1E7D    320780          STA  ICRCL        ;AND SET DISPLAY CURSOR              FILE 20
 1E80    C9              RET             ;RETURN                                FILE 20
                 ;                                                              FILE 20
                 ;*********************                                         FILE 20
                 ; DISPLAY ENHANCEMENT *                                        FILE 20
                 ;*********************                                         FILE 20
 1E81            DSPEN  EQU  $                                                  FILE 20
 1E81    CD8917          CALL CKSFK      ;DEFINE SOFT KEY MODE?                 FILE 20
 1E84    C0              RNZ             ;YES - NO DISPLAY ENHANCEMEN           FILE 20
 1E85    21A324          LXI  H,DNTAB    ;SET FOR DISPLAY ENHANCEMENT           FILE 20
 1E88    C3F504          JMP ECAPO                                              FILE 20
                 ;*****************************************                      FILE 20
                 ; DISPLC - ENTER DISPLAY ENHANCEMENT CHAR *                    FILE 20
                 ;*****************************************                      FILE 20
 1E8B            DSPLC  EQU $                                                   FILE 20
 1E8B    3A89FF          LDA  DCHAR      ;GET DISPLAY CHARACTER                 FILE 20
 1E8E    E60F            ANI  17Q        ;EXTRACT ENHANCEMENT BITS              FILE 20
 1E90            DSPCO  EQU  $                                                  FILE 20
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                                                                          FILE 20
                                                                          FILE 20
                                                                          FILE 20
                                                                          FILE 20
                                                                          FILE 20
 1E90   0630            MVI  B,60Q     ;SET MASK TO SAVE ALT CHAR         FILE 20
                ;*********************************************           FILE 20
                ; DISPC1 - ENTER ENHANCEMENT OR FLAG CHARACTER *          FILE 20
                ;*********************************************           FILE 20
                ;                                                         FILE 20
                ;  ENTRY:  A = CHARACTER TO BE STORED                     FILE 20
                ;          B = MASK TO SAVE UNCHANGED PART (USED          FILE 20
                ;            ONLY FOR ENHANCEMENT CHARACTERS)             FILE 20
                ;                                                         FILE 20
                ;  EXIT :  SEE "DISPLA"                                   FILE 20
                ;                                                         FILE 20
 1E92           DSPC1  EQU  $                                             FILE 20
 1E92   F680           ORI  200Q      ;ADD BIT FOR REFRESH LOGIC          FILE 20
 1E94           DSPC2  EQU  $                                             FILE 20
 1E94   3289FF         STA  DCHAR     ;STORE NEW ENHANCEMENT CODE         FILE 20
 1E97   78             MOV  A,B       ;STORE MASK FOR ENHANCEMENT         FILE 20
 1E98   3277FF         STA  CSPEN       ;BITS NOT TO BE ALTERED           FILE 20
                ;                     FALL INTO DISPLAY ROUTINE           FILE 20
                ;                                                         FILE 20
                ;***********************************                     FILE 20
                ; DISPLA - ADD CHARACTER TO DISPLAY *                     FILE 20
                ;***********************************                     FILE 20
                ;                                                         FILE 20
                ;  ENTRY:  CURCOL,CURROW = SCREEN POSITION WHERE          FILE 20
                ;            CHARACTER IS TO BE INSERTED                  FILE 20
                ;          DCHAR = CHARACTER TO BE DISPLAYED              FILE 20
                ;          CDSPEN = MASK TO MASK OUT COMMON BITS          FILE 20
                ;            IF DCHAR IS A DISPLAY CONTROL BYTE           FILE 20
                ;                                                         FILE 20
                ;  EXIT :  A = 0, NO PLACE FOR CHARACTER                  FILE 20
                ;          A # 0, CHARACTER PROCESSED                     FILE 20
                ;            B = CHARACTER REPLACED IF ADDITION           FILE 20
                ;              DONE BY INSERT                             FILE 20
                ;                D,E = ADDRESS OF CHAR IN DISPLAY         FILE 20
                ;                                                         FILE 20
 1E9B           DSPLA  EQU $                                              FILE 20
 1E9B   3A89FF         LDA  DCHAR  ;GET CHAR TO BE STORED                 FILE 20
 1E9E   B7             ORA A        ;IS THIS ASCII CHAR?                  FILE 20
 1E9F   F2DF1F         JP  DS060    ;YES - CONTINUE                       FILE 20
                ;***********************************                     FILE 20
                ; CONTROL CODE TO BE ENTERED INTO    *                    FILE 20
                ; DATA STREAM - FIND CHAR PRECEDING *                     FILE 20
                ; THIS COLUMN                        *                    FILE 20
                ;***********************************                     FILE 20
 1EA2   3AC1FF         LDA  CRCOL     ;GET CURRENT COLUMN NUMBER          FILE 20
 1EA5   3D             DCR  A         ;SET FOR PREVIOUS COLUMN            FILE 20
 1EA6   CD6C07         CALL RADRO     ;DOES LINE EXIST?                   FILE 20
 1EA9   FA720B         JM   MOCK1     ;NO - SOUND BELL AND EXIT           FILE 20
                ;                       WITH A-REGISTER = 0               FILE 20
 1EAC   C22920         JNZ  DI100     ;COL BEYOND EOL - EXTEND LIN        FILE 20
                ;***********************                                 FILE 20
                ; PREVIOUS COLUMN FOUND *                                 FILE 20
                ;***********************                                 FILE 20
 1EAF   4F             MOV C,A       ;SAVE COLUMN IN C                    FILE 20
 1EB0   0C             INR  C          ;SET C TO NEXT COLUMN NUMBER       FILE 20
 1EB1   CDDA0F         CALL CPROT     ;PREVIOUS CHAR PROTECTED?           FILE 20
 1EB4   C2C51E         JNZ  DS030     ;NO - CONTINUE                      FILE 20
 1EB7           DS020  EQU  $                                             FILE 20
 1EB7   1B             DCX  D          ;YES - SET PTR TO NEXT CHAR        FILE 20
 1EB8   21C2C1         LXI  H,ENDPR*256+XONLY                             FILE 20
```

```
                                                                  FILE 20
                                                                  FILE 20
                                                                  FILE 20
                                                                  FILE 20
                                                                  FILE 20
1EBB   CD221B         CALL FNDCH    ;IS NEXT CHARACTER PROTECTED   FILE 20
1EBE   CA1420         JZ   DS092    ;YES - LOOK FOR NEXT FIELD     FILE 20
1EC1   21C1FF         LXI  H,CRCOL  ;YES - RECALL COLUMN VALUE     FILE 20
1EC4   4E             MOV  C,M                                     FILE 20
                ;                                                  FILE 20
                ;*********************************                 FILE 20
                ; SEARCH FOR PLACE FOR CHARACTER *                 FILE 20
                ;*********************************                 FILE 20
1EC5            DS030  EQU $                                       FILE 20
1EC5   CDBB0B         CALL NTCHR   ;GET NEXT CHAR                  FILE 20
1EC8   47             MOV  B,A      ;SAVE EXISTING CHAR IN B-REG   FILE 20
1EC9   2189FF         LXI  H,DCHAR                                 FILE 20
1ECC   FEC4           CPI  SPFLG    ;NON-DISPLAYING TERMINATOR?    FILE 20
1ECE   CAF11E         JZ   DS035    ;YES - DELETE IT               FILE 20
1ED1   FECC           CPI  EOL      ;EXISTING CHARACTER AN EOL?    FILE 20
1ED3   7E             MOV  A,M        ;(GET CHAR TO BE DISPLAYED   FILE 20
1ED4   CAC71F         JZ   DS050    ;YES - ADD CHARACTER TO LINE   FILE 20
1ED7   FEC4           CPI  SPFLG    ;NON-DISPLAYING TERMINATOR?    FILE 20
1ED9   CA0F50         JZ   CI104    ;YES - INSERT TERMINATOR       FILE 20
1EDC   78             MOV  A,B      ;NO - RECALL EXISTING CHAR     FILE 20
1EDD   87             ADD  A        ;EXISTING CHARACTER ASCII?     FILE 20
1EDE   7E             MOV  A,M        ;(GET CHAR TO BE DISPLAYED   FILE 20
1EDF   D2C71F         JNC  DS050    ;YES - INSERT NEW CHARACTER    FILE 20
1EE2   FAF91E         JM   DS040    ;FLAG CHAR - ADD FLAG TO DIS   FILE 20
1EE5   87             ADD  A        ;NEW CHAR DISPLAY CONTROL?     FILE 20
1EE6   FAC51E         JM   DS030    ;NO - GO TO NEXT CHARACTER     FILE 20
                ;***********************************               FILE 20
                ; MERGE NEW DISPLAY ENHANCEMENT     *              FILE 20
                ; WITH CODE ALREADY IN THIS COLUMN *               FILE 20
                ;***********************************               FILE 20
1EE9   3A77FF         LDA  CSPEN    ;GET ENHANCEMENT MASK          FILE 20
1EEC   A0             ANA B        ;EXTRACT BITS TO BE SAVED       FILE 20
1EED   B6             ORA  M        ;COMBINE WITH NEW ENHANCEMEN   FILE 20
1EEE   C3B51F         JMP  DS044    ;STORE THE NEW DISPLAY CODE    FILE 20
                ;**********************************************    FILE 20
                ; NON-DISPLAYING TERMINATOR FOUND - DELETE IT *    FILE 20
                ;**********************************************    FILE 20
1EF1            DS035  EQU  $                                      FILE 20
1EF1   BE             CMP  M        ;IS NEW CHAR TERMINATOR ALSO   FILE 20
1EF2   C8             RZ            ;YES - RETURN                  FILE 20
1EF3   CDB518         CALL CRDL2    ;NO - DELETE THE CHARACTER     FILE 20
1EF6   C3C51E         JMP  DS030    ;CONTINUE SCAN                 FILE 20
                ;                                                  FILE 20
                ;*****************                                 FILE 20
                ; FLAG CHAR FOUND *                                FILE 20
                ;*****************                                 FILE 20
1EF9            DS040  EQU $                                       FILE 20
1EF9   B8             CMP B        ;IS THIS SAME FLAG CHAR?        FILE 20
1EFA   C8             RZ             ;YES - RETURN (A # 0)         FILE 20
1EFB   87             ADD  A        ;NEW CHARACTER DISPLAY CNTL?   FILE 20
1EFC   1F             RAR             ;(RESTORE CHARACTER)         FILE 20
1EFD   F2B81F         JP   DS045    ;YES - CHECK PROTECTED FIELD   FILE 20
1F00   FEC5           CPI  ALPHA    ;IS NEW CHAR TYPE DEFINITION   FILE 20
1F02   78             MOV  A,B        ;(RECALL OLD FLAG CHAR)      FILE 20
1F03   FA0E1F         JM   DS042    ;NO - ADD FIELD DEFINITION     FILE 20
1F06   FEC5           CPI  ALPHA    ;IS OLD CHAR TYPE DEFINITION   FILE 20
1F08   F21D1F         JP   DS043    ;YES - REPLACE THE CHARACTER   FILE 20
1F0B   C3C51E         JMP  DS030    ;NO - GO TO NEXT CHARACTER     FILE 20
                ;**********************************************    FILE 20
                ; FIELD DEFINITION CHARACTER TO BE ADDED - PUT *   FILE 20
```

```
                         FILE 20
                         FILE 20
                         FILE 20
                         FILE 20
                         FILE 20
                    ;   AHEAD OF TYPE DEFINITION OR AFTER "STPR"   *    FILE 20
                    ;*********************************************      FILE 20
1F0E                DS042   EQU  $                                      FILE 20
1F0E    FEC5                CPI  ALPHA       ;IS OLD CHAR TYPE DEFINITION  FILE 20
1F10    F20F50              JP   CI104       ;YES - INSERT FIELD DEF    FILE 20
1F13    3EC0                MVI  A,STPR      ;NO - STORE NEW FIELD DEF  FILE 20
1F15    B8                  CMP  B           ;OLD CHAR = START PROTECT?  FILE 20
1F16    CAC51E              JZ   DS030       ;YES - LOOK TO NEXT CHAR   FILE 20
1F19    BE                  CMP  M           ;IS NEW CHAR A STPR?       FILE 20
1F1A    CA0F50              JZ   CI104       ;YES - INSERT BEFORE UNPROTC  FILE 20
                    ;***********************************         FILE 20
                    ; REPLACE EXISTING DISPLAY CHARACTER *       FILE 20
                    ;***********************************         FILE 20
1F1D                DS043   EQU  $                               FILE 20
1F1D    1A                  LDAX D           ;PUT EXISTING CHARACTER INTO  FILE 20
1F1E    47                  MOV  B,A           ;B-REG FOR SOFT KEY CHECK  FILE 20
1F1F    3A89FF              LDA  DCHAR       ;GET CHAR TO BE DISPLAYED  FILE 20
1F22    216CFF              LXI  H,SPOWL     ;CHECK AGAINST SPOW LATCH  FILE 20
1F25    BE                  CMP  M           ;INPUT = SPACE AND SPOW SET?  FILE 20
1F26    C8                  RZ               ;YES - RETURN (A # 0)      FILE 20
                    ;                                            FILE 20
                    ;    2. + 3. EBEBE PRUEFEN                   FILE 20
                    ;                                            FILE 20
1F27                BY960   EQU  $                               FILE 20
1F27    CD1B12              CALL DXB2D                           FILE 20
1F2A    C2471F              JNZ  Y960C                           FILE 20
1F2D    3A12FF              LDA  KCTSH                           FILE 20
1F30    E606                ANI  LF1KY+LF2KY  ;SHIFT KEYS        FILE 20
1F32    C2471F              JNZ  Y960C                           FILE 20
1F35    CD2E07              CALL RADR4       ;GET.CHAR.          FILE 20
1F38    1A                  LDAX D           ;                   FILE 20
1F39    B7                  ORA  A                               FILE 20
1F3A    F2441F              JP   Y960B       ;ASCI               FILE 20
1F3D    E6F0                ANI  Y0F0                            FILE 20
1F3F    FEA0                CPI  Y0A0        ;ALT. CHAR.         FILE 20
1F41    CA4D1F              JZ   Y960D       ;YES                FILE 20
                    ;                                            FILE 20
1F44                Y960B   EQU  $                               FILE 20
1F44    CD6907              CALL RADDR                           FILE 20
1F47                Y960C   EQU  $                               FILE 20
1F47    3A89FF              LDA  DCHAR                           FILE 20
1F4A    12                  STAX D                               FILE 20
1F4B    3C                  INR  A                               FILE 20
1F4C    C9                  RET                                  FILE 20
                    ;                                            FILE 20
1F4D                Y960D   EQU  $                               FILE 20
1F4D    26FF                MVI  H,BASEH                         FILE 20
1F4F    CD181D              CALL CURPL                           FILE 20
1F52    CD2E07              CALL RADR4                           FILE 20
1F55    C2641F              JNZ  Y960G                           FILE 20
1F58    1A                  LDAX D                               FILE 20
1F59    B7                  ORA  A                               FILE 20
1F5A    F2641F              JP   Y960G       ;ASCII              FILE 20
1F5D    E6F0                ANI  Y0F0                            FILE 20
1F5F    FEA0                CPI  Y0A0                            FILE 20
1F61    CA7A1F              JZ   Y960K                           FILE 20
                    ;                                            FILE 20
1F64                Y960G   EQU  $                               FILE 20
1F64    26FF                MVI  H,BASEH                         FILE 20
1F66    CD131D              CALL CURPR                           FILE 20
```

```
1F69    CD2E07          CALL RADR4                                  FILE 20
1F6C    C5              PUSH B                                      FILE 20
1F6D    D5              PUSH D                                      FILE 20
1F6E    CD1618          CALL CRDL1                                  FILE 20
1F71    D1              POP  D                                      FILE 20
1F72    C1              POP  B                                      FILE 20
1F73    3A89FF          LDA  DCHAR                                  FILE 20
1F76    12              STAX D          ;INS CHAR.                  FILE 20
1F77    C38F1F          JMP  Y960M                                  FILE 20
                ;                                                   FILE 20
1F7A            Y960K   EQU  $                                      FILE 20
1F7A    26FF            MVI  H,BASEH                                FILE 20
1F7C    CD131D          CALL CURPR                                  FILE 20
1F7F    CD2E07          CALL RADR4                                  FILE 20
1F82    1A              LDAX D                                      FILE 20
1F83    E60F            ANI  Y00F                                   FILE 20
1F85    F680            ORI  200Q                                   FILE 20
1F87    12              STAX D                                      FILE 20
1F88    CDBB0B          CALL NTCHR                                  FILE 20
1F8B    3A89FF          LDA  DCHAR                                  FILE 20
1F8E    12              STAX D                                      FILE 20
1F8F            Y960M   EQU  $                                      FILE 20
1F8F    CDBB0B          CALL NTCHR                                  FILE 20
1F92    E6F0            ANI  Y0F0                                   FILE 20
1F94    FE80            CPI  200Q                                   FILE 20
1F96    CC1618          CZ   CRDL1                                  FILE 20
1F99    CD6907          CALL RADDR                                  FILE 20
1F9C    C9              RET                                         FILE 20
                ;                                                   FILE 20
                ;                                                   FILE 20
                ;                                                   FILE 20
                ;                                                   FILE 20
                ;                                                   FILE 20
1F9D            BY970   EQU $                                       FILE 20
1F9D    3289FF          STA  DCHAR                                  FILE 20
1FA0    E6F0            ANI  Y0F0                                   FILE 20
1FA2    FE80            CPI  Y080                                   FILE 20
1FA4    C2AF1F          JNZ  Y970D                                  FILE 20
1FA7    78              MOV  A,B                                    FILE 20
1FA8    E6F0            ANI  Y0F0                                   FILE 20
1FAA    FEA0            CPI  Y0A0                                   FILE 20
1FAC    CAB31F          JZ   Y970E                                  FILE 20
1FAF            Y970D   EQU  $                                      FILE 20
1FAF    3A89FF          LDA  DCHAR                                  FILE 20
1FB2    12              STAX D                                      FILE 20
1FB3            Y970E   EQU  $                                      FILE 20
1FB3    3C              INR  A                                      FILE 20
1FB4    C9              RET                                         FILE 20
                ;                                                   FILE 20
                ;                                                   FILE 20
1FB5            DS044   EQU  $                                      FILE 20
1FB5    C39D1F          JMP  BY970      ;STORE THE NEW CHARACTER    FILE 20
                ;                                                   FILE 20
                ;******************************                     FILE 20
                ; FLAG CHAR FOUND AND          *                    FILE 20
                ; DISPLAY CONTROL TO BE ADDED *                     FILE 20
                ;******************************                     FILE 20
1FB8            DS045   EQU  $                                      FILE 20
1FB8    78              MOV  A,B        ;RECALL EXISTING CHARACTER  FILE 20
1FB9    FEC0            CPI  STPR       ;BEGINNING A PROTECTED FIELD FILE 20
```

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                                                                          FILE 20
                                                                          FILE 20
                                                                          FILE 20
                                                                          FILE 20
                                                                          FILE 20
1FBB   C2C51E          JNZ  DS030      ;NO - MOVE TO NEXT CHAR            FILE 20
1FBE   CD7317          CALL CKFMS      ;FORMAT MODE?                      FILE 20
1FC1   CAC51E          JZ   DS030      ;NO - ADD CHAR TO DISPLAY          FILE 20
1FC4   C3B71E          JMP  DS020      ;YES - LOOK FOR NEXT FIELD         FILE 20
               ;**************************************                    FILE 20
               ; ASCII OR EOL FOUND                   *                   FILE 20
               ; MERGE NEW DISPLAY CONTROL IF NECESSARY *                 FILE 20
               ;**************************************                    FILE 20
1FC7           DS050   EQU  $                                             FILE 20
1FC7   87              ADD  A          ;NEW CHAR DISPLAY CONTROL?         FILE 20
1FC8   FAD51F          JM   DS054      ;NO - ADD CHAR TO DISPLAY          FILE 20
1FCB   3A77FF          LDA  CSPEN      ;YES - GET MASK                    FILE 20
1FCE   2EC6            MVI  L,LTDCD-BASE   ;GET LAST ENHANCEMENT          FILE 20
1FD0   A6              ANA M           ;EXTRACT BITS TO BE SAVED          FILE 20
1FD1   2E89            MVI  L,DCHAR-BASE                                  FILE 20
1FD3   B6              ORA  M          ;COMBINE WITH NEW ENHANCEMEN       FILE 20
1FD4   77              MOV M,A         ;STORE                             FILE 20
1FD5           DS054   EQU $                                              FILE 20
1FD5   78              MOV A,B         ;WAS CHAR ASCII?                   FILE 20
1FD6   B7              ORA A                                              FILE 20
1FD7   F20F50          JP   CI104      ;YES - DO INSERT                   FILE 20
1FDA   0E00            MVI C,0         ;NO - ADD SINGLE CHAR              FILE 20
1FDC   C33E20          JMP DI110                                          FILE 20
               ;                                                          FILE 20
               ;****************************************                  FILE 20
               ; ENTER ASCII CHARACTER INTO DATA STREAM *                 FILE 20
               ;****************************************                  FILE 20
1FDF           DPASC   EQU  $                                             FILE 20
1FDF           DS060   EQU $                                              FILE 20
1FDF   CD6907          CALL RADDR      ;GET MEMORY ADDRESS                FILE 20
1FE2   CAFE1F          JZ  DS080       ;CHAR FOUND BY RCADDR              FILE 20
1FE5           DSPLO   EQU $                                              FILE 20
1FE5   FAF41F          JM  DS070       ;RETURN IF LINE NOT BUILT          FILE 20
1FE8   0D              DCR C                                              FILE 20
1FE9   C22920          JNZ DI100       ;MORE THAN ONE CHAR NEEDED         FILE 20
               ;******************************                            FILE 20
               ; SINGLE CHARACTER REQUIRED    *                           FILE 20
               ; CHECK FOR LAST COLUMN OF LINE *                          FILE 20
               ;******************************                            FILE 20
1FEC   FE4F            CPI MXCOL       ;COMPARE WITH MAX COLUMN           FILE 20
1FEE   C23E20          JNZ DI110       ;NOT MAXIMUM COLUMN                FILE 20
1FF1   C30E20          JMP DS090                                          FILE 20
               ;******************************                            FILE 20
               ; LINE NOT BUILT               *                           FILE 20
               ; PERFORM HOMEUP IF FORMAT MODE *                          FILE 20
               ;******************************                            FILE 20
1FF4           DS070   EQU  $                                             FILE 20
1FF4   CD7317          CALL CKFMS      ;FORMAT MODE?                      FILE 20
1FF7   C8              RZ              ;NO - RETURN (A = 0)               FILE 20
1FF8   CD1470          CALL ZBELL      ;YES - SOUND BELL                  FILE 20
1FFB   C32220          JMP  DS093      ;HOME UP AND TRY AGAIN             FILE 20
               ;                                                          FILE 20
               ;***********************                                   FILE 20
               ; CHARACTER REPLACEMENT *                                  FILE 20
               ;***********************                                   FILE 20
1FFE           DS080   EQU $                                              FILE 20
1FFE   4F              MOV C,A         ;SAVE COLUMN IN C                  FILE 20
1FFF   3AF4FF          LDA  MFLG1      ;GET TERMINAL MODE FLAGS           FILE 20
2002   E602            ANI  ISCHR      ;IN CHARACTER INSERT MODE?         FILE 20
2004   CA0E20          JZ   DS090      ;NO - ADD CHARACTER TO DISPL       FILE 20
```

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 2007    3A90FF          LDA   EOLMV      ;YES - GET EOL SHIFTED FLAG          FILE 20
 200A    B7              ORA   A          ;HAS LINE BEEN EXTENDED?             FILE 20
 200B    CA1250          JZ    CR050      ;NO - PERFORM INSERT CHAR            FILE 20
 200E           DS090    EQU   $                                               FILE 20
 200E    CDDA0F          CALL  CPROT      ;CURSOR IN PROTECTED FIELD?          FILE 20
 2011    C21D1F          JNZ   DS043      ;NO - STORE THE CHARACTER            FILE 20
 2014           DS092    EQU   $                                               FILE 20
 2014    CD1B12          CALL  DXB2D      ;DATA COMM OR I/O BUFF CHAR?         FILE 20
                ;        CZ    ZBELL      ;NO - SOUND THE BELL                 FILE 20
 2017    3A89FF          LDA   DCHAR      ;GET CHAR TO BE DISPLAYED            FILE 20
 201A    B7              ORA   A          ;IS IT A CONTROL CHARACTER?          FILE 20
 201B    F8              RM               ;YES - DON'T TAB (RETURN A#0         FILE 20
 201C    CD461A          CALL  FLDSR  ;NO - TAB TO NEXT FIELD                  FILE 20
 201F    C29B1E          JNZ DSPLA    ;JUMP IF FIELD FOUND                     FILE 20
 2022           DS093    EQU   $                                               FILE 20
 2022    CDAE19          CALL  CRPH1      ;ANY FIELDS IN DISPLAY?              FILE 20
 2025    C29B1E          JNZ   DSPLA      ;YES - ADD CHARACTER TO FIEL         FILE 20
 2028    C9              RET              ;NO - RETURN (A # 0)                 FILE 20
                ;                                                              FILE 20
                ;***********************************************               FILE 20
                ; LINE MUST BE EXTENDED TO ACCOMODATE CHARACTER  *             FILE 20
                ;   - EXTEND TO ONE COLUMN BEFORE DESIRED COLUMN *             FILE 20
                ;***********************************************               FILE 20
                ;                                                              FILE 20
                ;  ENTRY:  C = NUMBER OF CHARACTERS REQUIRED                   FILE 20
                ;                                                              FILE 20
 2029           DI100    EQU   $                                               FILE 20
 2029    0D              DCR   C          ;MORE THAN ONE CHAR TO ADD?          FILE 20
 202A    C23E20          JNZ   DI110      ;NO - ADD MULTIPLE CHARACTER         FILE 20
 202D    CDDA0F          CALL  CPROT      ;CURSOR IN PROTECTED FIELD?          FILE 20
 2030    CA1420          JZ    DS092      ;YES - TAB TO NEXT FIELD             FILE 20
 2033    219BFF          LXI   H,NCHAR    ;NO - SET "NCHAR" TO STORE           FILE 20
 2036    3601            MVI   M,1          ;BLANK OVER EOL (I.E.,             FILE 20
                ;                           MAKE DISPLAY ROUTINE               FILE 20
                ;                           THINK MORE THAN ONE                FILE 20
                ;                           CHARACTER BEING ADDED)             FILE 20
 2038    CD0F09          CALL  DSPL2      ;EXTEND LINE BY ONE CHARACTE         FILE 20
 203B    C34720          JMP   DS114      ;CHECK MEMORY LOCKED                 FILE 20
                ;                                                              FILE 20
 203E           DI110    EQU   $                                               FILE 20
 203E    CDDA0F          CALL  CPROT      ;CURSOR IN PROTECTED FIELD?          FILE 20
 2041    CA1420          JZ    DS092      ;YES - TAB TO NEXT FIELD             FILE 20
 2044    CD0309          CALL  DSPL1      ;NO - EXTEND LINE                    FILE 20
 2047           DS114    EQU   $                                               FILE 20
 2047    B7              ORA   A          ;MEMORY LOCKED?                      FILE 20
 2048    C8              RZ               ;YES - RETURN FAIL (A = 0)           FILE 20
 2049    3A9BFF          LDA   NCHAR      ;GET # OF CHARACTERS ADDED           FILE 20
 204C    3D              DCR   A          ;SINGLE CHARACTER ADDED?             FILE 20
 204D    F29B1E          JP    DSPLA      ;NO - TRY TO STORE AGAIN             FILE 20
 2050    C9              RET              ;YES - STORE DONE BY DISPLAY         FILE 20
                ;                           (A # 0)                            FILE 20
                ;                                                              FILE 20
                ;                                                              FILE 20
                ; * * * * * * * * * * * * * * * * * * * * * * *                FILE 20
                ;                                                              FILE 20
                ;  DSPTST - DISPLAY TEST PATTERN                               FILE 20
                ;                                                              FILE 20
                ;      ENTRY:  A = CHARACTER TO BE DISPLAYED                   FILE 20
                ;                                                              FILE 20
                ;      EXIT :  A,B,C,D,E,L DESTROYED                           FILE 20
```

```
                                                                FILE 20
                                                                FILE 20
                                                                FILE 20
                                                                FILE 20
                                                                FILE 20
                                                                FILE 20
                  ;                                             FILE 20
 2051             DPTST  EQU $                                  FILE 20
 2051   3289FF           STA   DCHAR  ;PUT CHAR IN DISPLAY BUFFER FILE 20
 2054   CD6B16           CALL STDFO     ;SET DATA COMM INPUT FLAG TO FILE 20
                  ;                      INHIBIT BELL ON FIELD SKIP FILE 20
                  ;                                             FILE 20
                  ;  DSPCHR - DISPLAY CHARACTER IN DCHAR        FILE 20
                  ;                                             FILE 20
 2057             DPCHR  EQU  $                                 FILE 20
 2057   217B1C           LXI  H,CRADV    ;SET NORMAL EXIT ROUTINE FILE 20
 205A             DPCH0  EQU  $                                 FILE 20
 205A   E5               PUSH H          ;SAVE NORMAL EXIT ROUTINE FILE 20
 205B   CDDF1F           CALL DPASC      ;ADD ASCII CHAR TO DISPLAY FILE 20
 205E   B7               ORA  A          ;CHARACTER DISPLAYED?   FILE 20
 205F   CA8D20           JZ   DH100      ;NO - DON'T MOVE CURSOR FILE 20
                  ;                      FALL INTO DISPLAY ROUTINE FILE 20
                  ;                                             FILE 20
 2062   CD7317           CALL CKFMS      ;FORMAT/SOFT KEY DEFINE MODE FILE 20
 2065   C8               RZ              ;NO - DO NORMAL EXIT    FILE 20
 2066   CD1B12           CALL DXB2D      ;DATA COMM OR I/O BUFF CHAR? FILE 20
 2069   C0               RNZ             ;NO - DO NORMAL EXIT    FILE 20
 206A   3A89FF           LDA  DCHAR      ;GET CHARACTER DISPLAYED FILE 20
 206D   2A86FF           LHLD CKRTN      ;NO - GET CHECK ROUTINE ADDR FILE 20
 2070   CF               RST  RTJMP      ;IS IT A VALID CHARACTER? FILE 20
 2071   C8               RZ              ;YES - DO NORMAL EXIT   FILE 20
 2072   F1               POP  PSW        ;NO - POP OFF NORMAL EXIT AD FILE 20
                  ;                                             FILE 20
                  ;  FIELD CHECK ERROR - LOCK UP UNTIL BACKSPACE HIT FILE 20
                  ;                                             FILE 20
 2073   AF               XRA  A          ;CLEAR OUT INPUT CHARACTER FILE 20
 2074   329CFF           STA  CARIN        ;TO KILL FUNCTION KEYS FILE 20
 2077             DH010  EQU  $                                 FILE 20
 2077   CD1470           CALL ZBELL      ;SOUND BELL             FILE 20
 207A             DH020  EQU  $                                 FILE 20
 207A   CD6915           CALL ICTMN      ;MONITOR THE TAPE DRIVES FILE 20
 207D   CD0570           CALL ZETKY      ;ANY KEY HIT?           FILE 20
 2080   C27A20           JNZ  DH020      ;NO - CONTINUE WAITING  FILE 20
 2083   FE0D             CPI  CR         ;IS IT THE RETURN KEY?  FILE 20
 2085   C27720           JNZ  DH010      ;NO - SOUND BELL, TRY AGAIN FILE 20
 2088   3E09             MVI  A,SPRPT    ;YES - STOP RETURN KEY  FILE 20
 208A   C30870           JMP  ZBCTL        ;FROM REPEATING AND EXIT FILE 20
                  ;*************************************        FILE 20
                  ; CHARACTER NOT DISPLAYED - SOUND BELL IF *   FILE 20
                  ;   CHARACTER FROM KEYBOARD              *    FILE 20
                  ;*************************************        FILE 20
 208D             DH100  EQU  $                                 FILE 20
 208D   E1               POP  H          ;POP OFF NORMAL EXIT ROUTINE FILE 20
 208E             DPCH1  EQU  $                                 FILE 20
 208E   CD1B12           CALL DXB2D      ;INPUT FROM KEYBOARD    FILE 20
 2091   CA1470           JZ   ZBELL      ;YES - SOUND BELL AND EXIT FILE 20
 2094   C9               RET             ;NO - RETURN ONLY       FILE 20
                  ;                                             FILE 20
                  ;****************************************     FILE 20
                  ; EXPAND - EXPAND DISPLAY CONTROL TO ESCAPE * FILE 20
                  ;   SEQUENCE                               *  FILE 20
                  ;****************************************     FILE 20
                  ;                                             FILE 20
                  ;  ENTRY:  A,C = DISPLAY CONTROL BYTE         FILE 20
                  ;                                             FILE 20
                  ;  EXIT :  H = BASEH                          FILE 20
```

```
                                                                          FILE 20
                                                                          FILE 20
                                                                          FILE 20
                  ;          A,B,L DESTROYED                              FILE 20
                  ;                                                       FILE 20
 2095             EPAND  EQU  $                                           FILE 20
 2095   CD4223           CALL IITD1      ;INITIALIZE CHAR BUFFER PTRS     FILE 20
 2098   87               ADD  A          ;IS CHAR DISPLAY CONTROL?        FILE 20
 2099   1F               RAR               ;(RESTORE CHARACTER)           FILE 20
 209A   FAE920           JM   EP100      ;NO - EXPAND FORMAT CONTROL      FILE 20
 209D   2176FF           LXI  H,EHOUT    ;YES - COMPARE TO PREVIOUS       FILE 20
 20A0   AE               XRA  M          ;ANY CHANGES?                    FILE 20
 20A1   00               NOP            ;NO - RETURN IMMEDIATELY          FILE 20
 20A2   E60F             ANI 17Q        ;CHANGE IN ENHANCEMENT?           FILE 20
 20A4   CABB20           JZ   EP010      ;NO - CHECK NEW CHARACTER SE     FILE 20
 20A7   0626             MVI  B,APSND    ;YES - OUTPUT ENHANCEMENT        FILE 20
 20A9   CD2F13           CALL EOUTB        ;ESCAPE SEQUENCE:              FILE 20
 20AC   3E64             MVI  A,SALLD      ;<ESC>-<&>-<LOWER CASE D>      FILE 20
 20AE   CD3513           CALL AOUTB                                       FILE 20
 20B1   79               MOV  A,C        ;COMPUTE ENHANCEMENT             FILE 20
 20B2   E60F             ANI  17Q          ;PARAMETER (@-O)               FILE 20
 20B4   F640             ORI  100Q       ;ADJUST TO ASCII LETTER          FILE 20
 20B6   CD3513           CALL AOUTB      ;PUT IT INTO OUTPUT BUFFER       FILE 20
 20B9   2E76             MVI  L,EHOUT-BASE   ;CHECK CHARACTER SET         FILE 20
                  ;                                                       FILE 20
                  ;                                                       FILE 20
                  ;  CHECK FOR CHARACTER SET CHANGE                       FILE 20
                  ;                                                       FILE 20
 20BB             EP010  EQU $                                            FILE 20
 20BB   79               MOV A,C        ;RECALL CURRENT SETTING           FILE 20
 20BC   AE               XRA M          ;COMPARE TO PREVIOUS VALUE        FILE 20
 20BD   E630             ANI 60Q        ;ANY CHANGE IN CHAR SET?          FILE 20
 20BF   71               MOV M,C        ;(SAVE NEW SETTING)               FILE 20
 20C0   00               NOP            ;NO - RETURN                      FILE 20
 20C1   79               MOV A,C        ;YES - RECALL NEW SETTING         FILE 20
 20C2   E630             ANI 60Q        ;RETURN TO BASE SET?              FILE 20
 20C4   CAE420           JZ  EP030      ;YES - SEND SHIFT IN (SI)         FILE 20
 20C7   2E75             MVI  L,CLTST-BASE   ;IS IT THE SAME              FILE 20
 20C9   BE               CMP  M               ;ALTERNATE CHAR SET?        FILE 20
 20CA   CADF20           JZ  EP020      ;YES - SEND SHIFT OUT ONLY        FILE 20
 20CD   77               MOV M,A        ;NO - SAVE NEW ALTERNATE          FILE 20
                  ;                                                       FILE 20
                  ;  GENERATE ESCAPE SEQUENCE FOR ALTERNATE               FILE 20
                  ;    CHARACTER SET SPECIFIER                            FILE 20
                  ;                                                       FILE 20
 20CE   0629             MVI  B,APARN    ;OUTPUT <ESC>                    FILE 20
 20D0   CD2F13           CALL EOUTB        ;<RIGHT PARENTHESIS>           FILE 20
 20D3   79               MOV  A,C                                         FILE 20
 20D4   E630             ANI 60Q        ;COMPUTE ALTERNATE CHARACTER      FILE 20
 20D6   0F               RRC            ;SET PARAMETER                    FILE 20
 20D7   0F               RRC                                              FILE 20
 20D8   0F               RRC                                              FILE 20
 20D9   0F               RRC                                              FILE 20
 20DA   C640             ADI 100Q                                         FILE 20
 20DC   CD3513           CALL AOUTB      ;SEND IT                         FILE 20
                  ;                                                       FILE 20
 20DF             EP020  EQU $                                            FILE 20
 20DF   3E0E             MVI A,SO       ;SEND SHIFT OUT (SO)              FILE 20
 20E1   C33513           JMP  AOUTB        ;AND RETURN                    FILE 20
                  ;                                                       FILE 20
 20E4             EP030  EQU $                                            FILE 20
 20E4   3E0F             MVI A,SI       ;SEND SHIFT IN                    FILE 20
 20E6   C33513           JMP  AOUTB        ;AND RETURN                    FILE 20
```

```
                                                                       FILE 20
8080 MACRO ASSEMBLER, VER 2.4          ERRORS = 0 PAGE 143            FILE 20
                                                                       FILE 20
                                                                       FILE 20
                                                                       FILE 20
                    ;                                                  FILE 20
                    ;                                                  FILE 20
                    ;  EXPAND ON FORMAT CONTROL                        FILE 20
                    ;                                                  FILE 20
 20E9               EP100   EQU   $                                    FILE 20
 20E9   FEC2                CPI   XONLY      ;TRANSMIT ONLY CONTROL?   FILE 20
 20EB   067B                MVI   B,LTBRC      ;(SET FOR LEFT BRACE)   FILE 20
 20ED   CA2F13              JZ    EOUTB      ;YES - OUTPUT AND EXIT    FILE 20
 20F0   F2FF20              JP    EP110      ;TYPE DEF - OUTPUT NUMBER FILE 20
 20F3   FEC1                CPI   ENDPR      ;END PROTECT?             FILE 20
 20F5   065B                MVI   B,LTBKT      ;(SET FOR LEFT BRACKET - FILE 20
 20F7   CA2F13              JZ    EOUTB      ;YES - OUTPUT AND EXIT    FILE 20
 20FA   04                  INR   B          ;NO - ALTER CHAR TO  RIGHT FILE 20
 20FB   04                  INR   B            ;BRACKET AND OUTPUT IT  FILE 20
 20FC   C32F13              JMP   EOUTB                                FILE 20
                    ;                                                  FILE 20
                    ;  TYPE DEFINITION - OUTPUT NUMERIC TERMINATOR     FILE 20
                    ;                                                  FILE 20
 20FF               EP110   EQU   $                                    FILE 20
 20FF   FEC8                CPI   SKYAT      ;IS CODE VALID?           FILE 20
 2101   067F                MVI   B,ADEL       ;(SET DEL CHAR FOR INVALID FILE 20
 2103   F23413              JP    BOUTB      ;NO - RETURN DEL CHARACTER FILE 20
 2106   FEC3                CPI   FILL       ;FILL CODE?               FILE 20
 2108   CA3413              JZ    BOUTB      ;YES - RETURN DEL CHARACTER FILE 20
 210B   D68F                SUI   ALPHA-6-ZERO  ;COMPUTE ASCII DIGIT   FILE 20
 210D   47                  MOV   B,A        ;PUT CHARACTER INTO B-REG FILE 20
 210E   C32F13              JMP   EOUTB      ;OUTPUT THE ESCAPE SEQUENCE FILE 20
                    ;                                                  FILE 20
                    ;                                                  FILE 20
                    ;  GET DISPLAY DATA                                FILE 20
                    ;                                                  FILE 20
 2111               GS010   EQU   $                                    FILE 20
 2111   CD8917              CALL  CKSFK      ;SOFT KEY MODE?           FILE 20
 2114   CAAD21              JZ    GS050      ;NO - DO NORMAL PROCEDURE FILE 20
 2117   3AC0FF              LDA   CRROW      ;YES - GET CURSOR ROW     FILE 20
 211A   FE10                CPI   STEND      ;BEYOND SOFT KEY DATA?    FILE 20
 211C   F2F821              JP    GS160      ;YES - RETURN END OF DISPLAY FILE 20
 211F   0F                  RRC              ;IN ATTRIBUTE ROW?        FILE 20
 2120   DA7921              JC    GS030      ;NO - OUTPUT DISPLAY DATA FILE 20
 2123   0626                MVI   B,APSND    ;YES - START ESCAPE SEQUENCE FILE 20
 2125   CD4223              CALL  IITD1      ;INIT OUTPUT BUFFER POINTERS FILE 20
 2128   CD2F13              CALL  EOUTB      ;SEND <ESC>-<&>           FILE 20
 212B   3E66                MVI   A,SALLF      ;<LOWER CASE F>         FILE 20
 212D   CD3513              CALL  AOUTB                                FILE 20
 2130   3AC0FF              LDA   CRROW                                FILE 20
 2133   0F                  RRC                ;<KEY NUMBER>           FILE 20
 2134   3C                  INR   A                                    FILE 20
 2135   F630                ORI   ZERO                                 FILE 20
 2137   CD3513              CALL  AOUTB                                FILE 20
 213A   3E6B                MVI   A,SALLK      ;<LOWER CASE K>         FILE 20
 213C   CD3513              CALL  AOUTB                                FILE 20
 213F   2AC9FF              LHLD  LTLIN      ;GET ADDRESS OF CURRENT   FILE 20
 2142   7D                  MOV   A,L          ;LINE                   FILE 20
 2143   D608                SUI   ABLOC      ;COMPUTE LOCATION OF      FILE 20
 2145   6F                  MOV   L,A          ;ATTRIBUTE CODE         FILE 20
 2146   7E                  MOV   A,M        ;GET ATTRIBUTE CODE       FILE 20
 2147   0630                MVI   B,ZERO     ;COMPUTE ATTRIBUTE CODE:  FILE 20
 2149   FE4E                CPI   NX                                   FILE 20
 214B   CA5521              JZ    GS020        ;0 = NORMAL             FILE 20
 214E   04                  INR   B            ;1 = LOCAL ONLY         FILE 20
```

```
                                                                FILE 20
                                                                FILE 20
                                                                FILE 20
                                                                FILE 20
                                                                FILE 20
  214F   FE4C            CPI  LX          ;2 = TRANSMIT ONLY    FILE 20
  2151   CA5521          JZ   GS020                             FILE 20
  2154   04              INR  B                                 FILE 20
  2155          GS020    EQU  $                                 FILE 20
  2155   CD3413          CALL BOUTB       ;OUTPUT ATTRIBUTE CODE       FILE 20
  2158   3E61            MVI  A,SALLA                           FILE 20
  215A   CD3513          CALL AOUTB       ;OUTPUT <LOWER CASE A>       FILE 20
  215D   3E10            MVI  A,FSOUT     ;SET FLAG TO INDICATE FIRST  FILE 20
  215F   CD9516          CALL STMF2         ;SOFT KEY DATA OUT         FILE 20
  2162   CD461A          CALL FLDSR       ;LOCATE THE DATA FIELD       FILE 20
  2165   EB              XCHG                                   FILE 20
  2166   2273FF          SHLD GTADR       ;SAVE FIRST CHAR ADDRESS     FILE 20
                ;                         RESTART "GETDSP" TO OUTPUT   FILE 20
                ;                           FIRST SOFT KEY CHAR        FILE 20
                ;                                               FILE 20
                ;                                               FILE 20
                ; * * * * * * * * * * * * * * * * * * * * * * * *      FILE 20
                ;                                               FILE 20
                ;  GETDSP - GET A CHARACTER FROM DISPLAY        FILE 20
                ;                                               FILE 20
                ;        ENTRY:  CURADR = ADDR OF DISPLAY BYTE         FILE 20
                ;                CURCOL = COLUMN OF NEXT BYTE          FILE 20
                ;                                               FILE 20
                ;        EXIT :  NC - CHARACTER FOUND           FILE 20
                ;                  A = CHARACTER                FILE 20
                ;                  GETADR,CURCOL UPDATED        FILE 20
                ;                C - NO CHARACTER               FILE 20
                ;                  M - END OF DISPLAY           FILE 20
                ;                  Z - END OF FIELD             FILE 20
                ;                  P,NZ - END OF LINE           FILE 20
                ;                B-L DESTROYED                  FILE 20
                ;                                               FILE 20
  2169          GTDSP    EQU  $                                 FILE 20
  2169   213CFF          LXI  H,BDPTR     ;GET EXPANSION BUFFER        FILE 20
  216C   7E              MOV  A,M           ;POINTER                   FILE 20
  216D   2B              DCX  H           ;SET ADDRESS TO END POINTER  FILE 20
  216E   BE              CMP  M           ;BUFFER EMPTY?               FILE 20
  216F   CA1121          JZ   GS010       ;YES - GET BYTE FROM DISPLAY FILE 20
  2172   2C              INR  L           ;NO - INCREMENT POINTER AND  FILE 20
  2173   3C              INR  A             ;STORE IT                  FILE 20
  2174   77              MOV  M,A                               FILE 20
  2175   6F              MOV  L,A         ;SET BUFFER ADDRESS          FILE 20
  2176   7E              MOV  A,M         ;GET THE DATA BYTE           FILE 20
  2177   B7              ORA  A           ;SET C = FALSE               FILE 20
  2178   C9              RET              ;RETURN CHARACTER FOUND      FILE 20
                ;                                               FILE 20
                ;                                               FILE 20
                ;  GET SOFT KEY DATA                            FILE 20
                ;                                               FILE 20
  2179          GS030    EQU  $                                 FILE 20
  2179   216FFF          LXI  H,MLGS2     ;GET MODE FLAGS              FILE 20
  217C   7E              MOV  A,M         ;MASK OUT FIRST OUTPUT FLAG  FILE 20
  217D   E6EF            ANI  377Q-FSOUT                        FILE 20
  217F   BE              CMP  M           ;FIRST DATA?                 FILE 20
  2180   CAAD21          JZ   GS050       ;NO - GET NEXT DATA          FILE 20
  2183   77              MOV  M,A         ;YES - UPDATE FLAG           FILE 20
  2184   CD4223          CALL IITD1       ;INITIALIZE CHAR BUFFER PTRS FILE 20
  2187   2A73FF          LHLD GTADR       ;LOCATE END OF LINE          FILE 20
  218A   EB              XCHG             ;PUT START ADDRESS IN D,E    FILE 20
  218B   3E4F            MVI  A,MXCOL     ;SEARCH TO END OF LINE       FILE 20
```

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                                                                         FILE 20
                                                                         FILE 20
                                                                         FILE 20
                                                                         FILE 20
                                                                         FILE 20
 218D    CDDA1B           CALL FDLSO      ;ANY "EOL" IN DATA LINE?       FILE 20
 2190    3E50             MVI  A,MXCOL+1    ;(SET FOR NO EOL LENGTH=80   FILE 20
 2192    FA9621           JM   GS040      ;NO - OUTPUT VALUE MAXCOL+1    FILE 20
 2195    90               SUB  B          ;YES -  COMPUTE EOL LOCATION   FILE 20
 2196            GS040    EQU  $                                         FILE 20
 2196    F5               PUSH PSW        ;SAVE DATA LENGTH              FILE 20
 2197    213513           LXI  H,AOUTB    ;SET OUTPUT ROUTINE ADDRESS    FILE 20
 219A    CD7B08           CALL B2DE1      ;CONVERT AND STORE IN BUFFER   FILE 20
 219D    3E05             MVI  A,L        ;OUTPUT UPPER CASE L           FILE 20
 219F    CD3513           CALL AOUTB                                     FILE 20
 21A2    F1               POP  PSW        ;RECALL DATA LENGTH            FILE 20
 21A3    3D               DCR  A          ;DOES DATA EXIST?              FILE 20
 21A4    3E20             MVI  A,ABLNK      ;(SET TO ADD BLANK)          FILE 20
 21A6    FC3513           CM   AOUTB      ;NO - ADD A BLANK TO OUTPUT    FILE 20
 21A9    C36921           JMP  GTDSP      ;OUTPUT LENGTH PARAMETER       FILE 20
                 ;                                                       FILE 20
                 ;                                                       FILE 20
                 ;  GET NEXT BYTE FROM DISPLAY                           FILE 20
                 ;                                                       FILE 20
 21AC            GS045    EQU  $          ;ENTRY TO SKIP TERMINATOR      FILE 20
 21AC    77               MOV  M,A        ;UPDATE "DFLGS" TO CLEAR       FILE 20
                 ;                          SKIP TERMINATOR FLAG         FILE 20
 21AD            GS050    EQU  $                                         FILE 20
 21AD    2A73FF           LHLD GTADR    ;GET CURRENT ADDRESS             FILE 20
 21B0    AF               XRA  A                                         FILE 20
 21B1    B5               ORA  L          ;END OF DISPLAY?               FILE 20
 21B2    CAF521           JZ   GS150      ;YES - TERMINATE               FILE 20
 21B5            GS060    EQU  $                                         FILE 20
 21B5    7E               MOV  A,M                                       FILE 20
 21B6    2B               DCX  H          ;DECREMENT TO NEXT BYTE        FILE 20
 21B7    2273FF           SHLD GTADR      ;UPDATE "GETADR"               FILE 20
 21BA    B7               ORA  A          ;IS BYTE ASCII?                FILE 20
 21BB    F2CF21           JP   GS100      ;YES - RETURN CHARACTER        FILE 20
 21BE    FED0             CPI  LKLIM      ;IS IT A LINK?                 FILE 20
 21C0    DAFC21           JC   GS200      ;NO - PROCESS DISPLAY CONTRO   FILE 20
 21C3    6E               MOV  L,M        ;YES - SET NEW ADDRESS         FILE 20
 21C4    67               MOV  H,A                                       FILE 20
 21C5    7D               MOV  A,L        ;PUT LSB INTO A-REGISTER       FILE 20
 21C6    2F               CMA                                            FILE 20
 21C7    E60F             ANI  BLKSM      ;IS IT AN END OF LINE LINK?    FILE 20
 21C9    CAB521           JZ   GS060      ;NO - CONTINUE THRU CHAIN      FILE 20
 21CC    C38122           JMP  GS320      ;YES - CHECK TERMINATON        FILE 20
                 ;                                                       FILE 20
                 ;                                                       FILE 20
                 ;  ASCII BYTE FOUND - RETURN CHARACTER FOUND            FILE 20
                 ;                                                       FILE 20
 21CF            GS100    EQU  $                                         FILE 20
 21CF    47               MOV  B,A        ;SAVE THE CHARACTER            FILE 20
 21D0    11C1FF           LXI  D,CRCOL                                   FILE 20
 21D3    1A               LDAX D          ;INCREMENT CURSOR COLUMN       FILE 20
 21D4    3C               INR  A            ;POSITION                    FILE 20
 21D5    12               STAX D                                         FILE 20
 21D6    320780           STA  ICRCL      ;UPDATE DISPLAY CURSOR         FILE 20
 21D9    3A0478           LDA  BKTRM      ;GET BLOCK TERMINATOR CHAR     FILE 20
 21DC    B8               CMP  B          ;IS CHAR = BLOCK TERMINATOR?   FILE 20
 21DD    3EF7             MVI  A,377Q-SPTRM   ;(SET CLEAR FLAG)          FILE 20
 21DF    CAE721           JZ   GS110      ;YES - RETURN TERMINATION      FILE 20
 21E2    CDE015           CALL CRDFL      ;NO - CLEAR SKIP FLAG          FILE 20
 21E5    78               MOV  A,B        ;RECALL DISPLAY CHARACTER      FILE 20
 21E6    C9               RET             ;RETURN (NC FROM "CLRDFL")     FILE 20
```

```
                        ;*****************************************         FILE 20
                        ; BLOCK TERMINATOR - CHECK FOR END OF LINE, *      FILE 20
                        ;   RETURN END OF DISPLAY                  *      FILE 20
                        ;*****************************************         FILE 20
21E7                    GS110  EQU  $                                      FILE 20
21E7    216EFF                 LXI  H,DFLGS    ;CLEAR SKIP TERMINATOR FLAG FILE 20
21EA    A6                     ANA  M                                      FILE 20
21EB    BE                     CMP  M          ;WAS SKIP FLAG SET?         FILE 20
21EC    C2AC21                 JNZ  GS045      ;YES - IGNORE TERMINATOR    FILE 20
21EF    1A                     LDAX D          ;NO - TERMINATE TRANSMISSION FILE 20
21F0    FE50                   CPI  MXCOL+1    ;WAS RS IN LAST COLUMN?     FILE 20
21F2    CC0D1D                 CZ   CRLF       ;YES - DO CR,LF             FILE 20
                        ;                                                  FILE 20
                        ;  RETURN END OF DISPLAY                           FILE 20
                        ;                                                  FILE 20
21F5                    GS150  EQU  $                                      FILE 20
21F5    CDA21A                 CALL FDSRX      ;SET "LSTCOL" TO MAXCOL+1 TO FILE 20
                        ;                        FORCE LINE RE-SCAN        FILE 20
21F8                    GS160  EQU  $                                      FILE 20
21F8    AF                     XRA  A          ;SET A TO -1                FILE 20
21F9    3D                     DCR  A                                      FILE 20
21FA    37                     STC             ;SET C-FLAG TRUE            FILE 20
21FB    C9                     RET             ;RETURN                     FILE 20
                        ;                                                  FILE 20
                        ;                                                  FILE 20
                        ;  NON-ASCII BYTE PROCESSING                       FILE 20
                        ;                                                  FILE 20
21FC                    GS200  EQU  $                                      FILE 20
21FC    FECE                   CPI  EOP        ;END OF DISPLAY?            FILE 20
21FE    CAF521                 JZ   GS150      ;YES - RETURN END OF DISPLAY FILE 20
2201    FEC4                   CPI  SPFLG      ;NON-DISPLAYING TERMINATOR? FILE 20
2203    CA4922                 JZ   GS230      ;YES - RETURN END OF DISPLAY FILE 20
2206    FECC                   CPI  EOL        ;END OF LINE?               FILE 20
2208    CA5F22                 JZ   GS300      ;YES - RETURN END OF LINE   FILE 20
220B    FEC3                   CPI  FILL       ;FILL BYTE?                 FILE 20
220D    CAB521                 JZ   GS060      ;YES - GET NEXT BYTE        FILE 20
2210    4F                     MOV  C,A        ;NO - SAVE THE BYTE         FILE 20
2211    CD7317                 CALL CKFMS      ;FORMAT/SOFT KEY DEFINE MODE FILE 20
2214    C22422                 JNZ  GS210      ;YES - LOOK FOR START PROTEC FILE 20
2217    3A64FF                 LDA  IFLG2      ;NO - GET I/O FLAGS 2       FILE 20
221A    E620                   ANI  XS2BF      ;DISPLAY TO I/O BUFFER?     FILE 20
221C    79                     MOV  A,C        ; (RECALL DATA BYTE)        FILE 20
221D    C0                     RNZ             ;YES - RETURN UNEXPANDED BYT FILE 20
221E    CD9520                 CALL EPAND      ;NO - EXPAND DISPLAY CONTROL FILE 20
2221    C36921                 JMP  GTDSP      ;RETURN 1ST EXPANDED CHAR   FILE 20
                        ;                                                  FILE 20
                        ;  FORMAT MODE - IGNORE ALL DISPLAY CONTROL EXCEPT FILE 20
                        ;    FOR START PROTECT                             FILE 20
                        ;                                                  FILE 20
2224                    GS210  EQU  $                                      FILE 20
2224    79                     MOV  A,C        ;RECALL THE DATA BYTE       FILE 20
2225    FEC0                   CPI  STPR       ;IS IT START PROTECT?       FILE 20
2227    C2B521                 JNZ  GS060      ;NO - IGNORE THE BYTE       FILE 20
222A    EB                     XCHG            ;YES - PUT GETADR INTO D,E  FILE 20
222B    2AC0FF                 LHLD CRROW      ;SAVE ENDING ROW AND        FILE 20
222E    3AA3FF                 LDA  TLINO      ; COLUMN+1 FOR FIELD        FILE 20
2231    85                     ADD  L                                      FILE 20
2232    6F                     MOV  L,A        ;SAVE ABSOLUTE ROW NUMBER   FILE 20
2233    2220FF                 SHLD EDROW                                  FILE 20
2236                    GS220  EQU  $                                      FILE 20
```

```
2236   CDC80F          CALL GMOD1     ;PAGE MODE/DISPLAY -> BUFFER
2239   CA4622          JZ   GS225     ;NO - RETURN END OF FIELD
223C   CD3B1A          CALL FDSR1     ;ANY MORE FIELDS?
223F   CAF521          JZ   GS150     ;NO - EXIT END OF DISPLAY
2242   EB              XCHG           ;YES - STORE NEW GETADR
2243   2273FF          SHLD GTADR
2246            GS225  EQU  $
2246   AF              XRA  A         ;RETURN END OF FIELD
2247   37              STC              ;(C = TRUE, A = 0)
2248   C9              RET
                ;
                ;*******************************************
                ; NON-DISPLAYING TERMINATOR FOUND - CHECK FOR *
                ;   AUTO CLEAR OPTION                         *
                ;*******************************************
2249            GS230  EQU  $
2249   3AFAFF          LDA  KJMP2     ;GET JUMPERS SET 2
224C   E602            ANI  CRTRM     ;CLEAR TERMINATOR?
224E   3AC1FF          LDA  CRCOL       ;(SET CURRENT COLUMN)
2251   4F              MOV  C,A
2252   2A73FF          LHLD GTADR       ;(SET LOCATION OF
2255   23              INX  H               ;TERMINATOR)
2256   EB              XCHG             ;(PUT ADDRESS INTO D,E)
2257   C4B518          CNZ  CRDL2     ;YES - CLEAR THE BYTE
225A   EB              XCHG
225B   2B              DCX  H         ;SET LAST CHARACTER ADDRESS
225C   C3F521          JMP  GS150     ;RETURN END OF DISPLAY
                ;
                ;
                ;  END OF LINE - PAD OUT LINE IF FORMAT MODE
                ;
225F            GS300  EQU  $
225F   CD7317          CALL CKFMS     ;FORMAT/SOFT KEY DEFINE MODE
2262   CA7E22          JZ   GS310     ;NO - ADVANCE TO NEXT LINE
2265   FA7E22          JM   GS310     ;SOFT KEY - SKIP TO NEXT LIN
2268   11C1FF          LXI  D,CRCOL   ;FORMAT - BLANK FILL
226B   1A              LDAX D         ;GET CURRENT CURSOR COLUMN
226C   FE50            CPI  MXCOL+1   ;LINE COMPLETED?
226E   CA7E22          JZ   GS310     ;YES - ADVANCE TO NEXT LINE
2271   3C              INR  A         ;NO - INCREMENT COLUMN
2272   12              STAX D           ;NUMBER
2273   320780          STA  ICRCL     ;UPDATE DISPLAY CURSOR
2276   23              INX  H         ;RESTORE "GETADR" TO LOCATIO
2277   2273FF          SHLD GTADR       ;OF "EOL"
227A   3E20            MVI  A,ABLNK   ;RETURN BLANK
227C   B7              ORA  A         ;CLEAR C-FLAG
227D   C9              RET            ;RETURN
                ;
227E            GS310  EQU  $
227E   CD6617          CALL CAIN1     ;GET ADDR OF NEXT LINE LINK
                ;
                ;
                ;  EOL LINK FOUND - DETERMINE TERMINATION TYPE
                ;
2281            GS320  EQU  $
2281   7E              MOV  A,M       ;GET POINTER TO NEXT LINE
2282   2B              DCX  H
2283   6E              MOV  L,M
2284   67              MOV  H,A
2285   2273FF          SHLD GTADR     ;PUT IT INTO "GETADR"
```

FILE 20

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                                                                   FILE 20
                                                                   FILE 20
                                                                   FILE 20
                                                                   FILE 20
                                                                   FILE 20
2288    AF              XRA  A          ;PUT CURSOR IN COLUMN ZERO FILE 20
2289    3276FF          STA  EHOUT      ;CLEAR LAST ENHANCE OUT FLAG FILE 20
228C    CD7A1E          CALL CRET1                                 FILE 20
228F    CD7317          CALL CKFMS      ;FORMAT/SOFT KEY DEFINE MODE FILE 20
2292    CACC22          JZ   GS360      ;NEITHER - SEND END OF LINE FILE 20
2295    FAC622          JM   GS350      ;SOFT KEY - FIND NEXT FIELD FILE 20
2298    2AC0FF          LHLD CRROW      ;FORMAT - SAVE ENDING ROW AN FILE 20
229B    3AA3FF          LDA  TLINO        ;COLUMN+1 FOR FIELD      FILE 20
229E    85              ADD  L                                     FILE 20
229F    6F              MOV  L,A        ;SAVE ABSOLUTE ROW NUMBER  FILE 20
22A0    2220FF          SHLD EDROW                                 FILE 20
22A3    CDC70A          CALL LFEED      ;YES - DO LINE FEED        FILE 20
22A6    CD1D0F          CALL DSLN1      ;SET DISPLAY CURSOR ROW    FILE 20
22A9    2A73FF          LHLD GTADR      ;RECALL POINTER TO NEXT LINE FILE 20
22AC    7D              MOV  A,L        ;GET LSB VALUE             FILE 20
22AD    B7              ORA  A          ;END OF DISPLAY (LSB = 0)? FILE 20
22AE    CAF821          JZ   GS160      ;YES - RETURN END OF DISPLAY FILE 20
                ;                                                  FILE 20
                ;  FORMAT EOL - CHECK FOR CONTINUATION FIELD       FILE 20
                ;                                                  FILE 20
22B1    EB              XCHG            ;PUT CURRENT ADDR IN D,E   FILE 20
22B2    CD061B          CALL FDSR2      ;NEXT LINE CONTINUES FIELD? FILE 20
22B5    C23622          JNZ  GS220      ;NO - RETURN END OF FIELD  FILE 20
22B8    EB              XCHG            ;YES - CONTINUE PROCESSING FILE 20
22B9    3A64FF          LDA  IFLG2      ;GET I/O FLAGS 2           FILE 20
22BC    E620            ANI  XS2BF      ;DISPLAY TO I/O BUFFER?    FILE 20
22BE    CAB521          JZ   GS060      ;YES - CONTINUE FIELD      FILE 20
22C1    2273FF          SHLD GTADR      ;NO - STORE NEW "GETADR"   FILE 20
22C4    37              STC             ;RETURN END OF LINE        FILE 20
22C5    C9              RET             ;RETURN NZ, C              FILE 20
                ;                                                  FILE 20
                ;**********************************************    FILE 20
                ; END OF LINE FOR NON-FORMAT MODE - RETURN END *   FILE 20
                ;   OF LINE CODE (C, P, NZ)                    *   FILE 20
                ;**********************************************    FILE 20
22C6            GS350  EQU  $           ;SOFT KEY END OF LINE      FILE 20
22C6    CDC70A          CALL LFEED      ;LOCATE THE ATTRIBUTE OF THE FILE 20
22C9    CD461A          CALL FLDSR        ;NEXT DEFINITION         FILE 20
22CC            GS360  EQU  $           ;NON-FORMAT/SOFT KEY EOL   FILE 20
22CC    AF              XRA  A          ;SET NZ,P                  FILE 20
22CD    3C              INR  A                                     FILE 20
22CE    37              STC             ;SET C-TRUE                FILE 20
22CF    C9              RET             ;RETURN END OF LINE        FILE 20
                ;                                                  FILE 20
                ;*************************************             FILE 20
                ; INITDG - INITIALIZE FOR DISPLAY GET *            FILE 20
                ;*************************************             FILE 20
                ;                                                  FILE 20
                ;  EXIT :  Z - CHARACTER FOUND                     FILE 20
                ;              GETADR = ADDRESS OF FIRST CHARACTER FILE 20
                ;          NZ - NO CHARACTER FOUND                 FILE 20
                ;              GETADR UNCHANGED                    FILE 20
                ;          ALL REGISTERS DESTROYED                 FILE 20
                ;                                                  FILE 20
                ;  DISPLAY GET ROUTINE IS SET TO START             FILE 20
                ;  AT CURRENT CURSOR LOCATION                      FILE 20
                ;                                                  FILE 20
22D0            IITD0  EQU  $           ;ENTRY FOR DISPLAY TO I/O  FILE 20
22D0    CD7817          CALL CKFMT      ;FORMAT MODE ENABLED?      FILE 20
22D3    C2D922          JNZ  IITDG      ;YES - DON'T MOVE CURSOR   FILE 20
```

```
                                                                        FILE 20
                                                                        FILE 20
                                                                        FILE 20
                                                                        FILE 20
                                                                        FILE 20
 22D6   32C1FF          STA  CRCOL      ;NO - BEGIN AT LINE START       FILE 20
 22D9           IITDG   EQU  $                                          FILE 20
 22D9   CD6B16          CALL STDFO      ;SET DATA COMM INPUT FLAG TO    FILE 20
                ;                        ENABLE TRANSMIT ONLY DATA      FILE 20
 22DC   E6FB            ANI  377Q-NSEND   ;CLEAR NO DATA FLAG           FILE 20
 22DE   BE              CMP  M          ;WAS IT SET BEFORE?             FILE 20
 22DF   77              MOV  M,A          ;(SET NEW VALUE)              FILE 20
 22E0   C0              RNZ             ;YES - RETURN NO DATA           FILE 20
 22E1   2E64            MVI  L,IFLG2-BASE   ;CLEAR DISPLAY BOUNDARY     FILE 20
 22E3   7E              MOV  A,M          ;FLAGS                        FILE 20
 22E4   E63F            ANI  377Q-EDDSP-DPBTM                           FILE 20
 22E6   77              MOV  M,A                                        FILE 20
                ;                                                       FILE 20
                ;                                                       FILE 20
                ;  LOCATE FIRST CHARACTER                               FILE 20
                ;                                                       FILE 20
 22E7   CD8917          CALL CKSFK      ;SOFT KEY MODE?                 FILE 20
 22EA   CAFB22          JZ   IG055      ;NO - LOCATE THE FIRST CHAR     FILE 20
 22ED   21C0FF          LXI  H,CRROW    ;YES - CHECK CURSOR POSITION    FILE 20
 22F0   3E10            MVI  A,STEND                                    FILE 20
 22F2   BE              CMP  M          ;CURSOR BELOW DATA AREA?        FILE 20
 22F3   F8              RM              ;YES - RETURN NO CHARACTER      FILE 20
 22F4   3EFE            MVI  A,376Q     ;NO - SET CURSOR ROW TO         FILE 20
 22F6   A6              ANA  M            ;ATTRIBUTE ROW                FILE 20
 22F7   77              MOV  M,A                                        FILE 20
 22F8   AF              XRA  A          ;SET CURSOR COLUMN TO           FILE 20
 22F9   23              INX  H            ;BEGINNING OF ROW             FILE 20
 22FA   77              MOV  M,A                                        FILE 20
                ;                       LOCATE ATTRIBUTE                FILE 20
                ;                                                       FILE 20
 22FB           IG055   EQU  $                                          FILE 20
 22FB   3E01            MVI  A,INTRM    ;SET TO IGNORE NON-DISPLAYIN    FILE 20
 22FD   326DFF          STA  TMFCT        ;TERMINATORS                  FILE 20
 2300   CD2E07          CALL RADR4      ;DISPLAY PRESENT?               FILE 20
 2303   F8              RM              ;NO - RETURN NO CHARACTER       FILE 20
 2304   CA1023          JZ   IG060      ;CHARACTER - CHECK PROTECTED    FILE 20
 2307   CD7817          CALL CKFMT      ;EOL - FORMAT MODE?             FILE 20
 230A   CA2B23          JZ   IG100      ;NO - EXIT WITH EOL             FILE 20
 230D   C31423          JMP  IG070      ;YES - CHECK PROTECTED          FILE 20
                ;                                                       FILE 20
 2310           IG060   EQU  $                                          FILE 20
 2310   21C2FF          LXI  H,POFLD    ;SET PROTECT STATUS             FILE 20
 2313   70              MOV  M,B                                        FILE 20
 2314           IG070   EQU  $                                          FILE 20
 2314   CDDA0F          CALL CPROT      ;CURSOR IN PROTECTED FIELD?     FILE 20
 2317   C22523          JNZ  IG090      ;NO - RETURN CHARACTER FOUND    FILE 20
 231A   3EFF            MVI  A,SPXFR    ;SET TERMINATOR FUNCTION TO     FILE 20
 231C   326DFF          STA  TMFCT        ;TERMINATE TRANSFER           FILE 20
 231F   CD3B1A          CALL FDSR1      ;ANY MORE FIELDS?               FILE 20
 2322   CA590B          JZ   NEXIT      ;NO - RETURN NO CHARACTER       FILE 20
 2325           IG090   EQU  $                                          FILE 20
 2325   21FF00          LXI  H,377Q     ;INITIALIZE PREVIOUS FIELD'S    FILE 20
 2328   2220FF          SHLD EDROW        ;ROW AND COLUMN TO ZERO       FILE 20
                ;                                                       FILE 20
                ;                                                       FILE 20
                ;  CHARACTER FOUND - RETURN CHARACTER FOUND             FILE 20
                ;                                                       FILE 20
 232B           IG100   EQU  $                                          FILE 20
 232B   1A              LDAX D          ;GET FIRST CHARACTER            FILE 20
 232C   FEC4            CPI  SPFLG      ;NON-DISPLAYING TERMINATOR?     FILE 20
```

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232E    CCBB0B          CZ   NTCHR      ;YES - GET THE NEXT CHARACTE     FILE 20
2331    EB              XCHG            ;SAVE ADDRESS OF BYTE            FILE 20
2332    2273FF          SHLD GTADR                                       FILE 20
2335    3A2A70          LDA  ATOUT      ;SET CURRENT ALTERNATE CHAR      FILE 20
2338    3275FF          STA  CLTST        ;SET TO DEFAULT VALUE          FILE 20
233B    3AC6FF          LDA  LTDCD      ;SET LAST ENHANCEMENT OUT        FILE 20
233E    3276FF          STA  EHOUT        ;WORD                          FILE 20
2341    BF              CMP  A          ;SET Z-FLAG TRUE                 FILE 20
2342            IITD1   EQU  $          ;INITIALIZE CHARACTER BUFFER     FILE 20
2342    2179FF          LXI  H,BDBFL-1*256+BDBFL-1     ;POINTERS         FILE 20
2345    223BFF          SHLD BDEND                                       FILE 20
2348    C9              RET             ;RETURN                          FILE 20
                ;                                                        FILE 20
                ;*************************************                   FILE 20
                ;  SET FLAG BIT    BYFL2                                 FILE 20
                ;*************************************                   FILE 20
2349            SBFL2   EQU  $                                           FILE 20
2349    2166FE          LXI  H,BYFL2                                     FILE 20
234C    B6              ORA  M                                           FILE 20
234D    77              MOV  M,A                                         FILE 20
234E    C9              RET                                              FILE 20
                ;*************************************                   FILE 20
                ;  CLEAR FLAG BIT  BYFL2                                 FILE 20
                ;*************************************                   FILE 20
234F            CBFL2   EQU  $                                           FILE 20
234F    2166FE          LXI  H,BYFL2                                     FILE 20
2352    A6              ANA  M                                           FILE 20
2353    77              MOV  M,A                                         FILE 20
2354    C9              RET                                              FILE 20
                ;                                                        FILE 20
                ;   INIT. PARAMETER ESC SEQUENCE                         FILE 20
                ;                                                        FILE 20
2355            PMSEQ   EQU  $                                           FILE 20
2355    218124          LXI  H,PMTAB                                     FILE 20
2358    C3F304          JMP  ECAPA                                       FILE 20
                ;                                                        FILE 20
                ;                                                        FILE 20
                ;*************************************************       FILE 20
                ; STAT2 - SEND SECONDARY TERMINAL STATUS REQUEST *       FILE 20
                ;*************************************************       FILE 20
235B            STT2    EQU  $                                           FILE 20
235B    010004          LXI  B,STAT2   ;SET SECONDARY STATUS PENDIN      FILE 20
235E    C32616          JMP  SLXFO       ;FLAG                           FILE 20
                ;**********************************************          FILE 20
                ; STA2GO - TRANSMIT SECONDARY TERMINAL STATUS *          FILE 20
                ;**********************************************          FILE 20
2361            SA2GO   EQU  $                                           FILE 20
2361    01FFFB          LXI  B,-1-STAT2                                  FILE 20
2364    CDE50F          CALL CBLXF      ;CLEAR STATUS 2 PENDING FLAG     FILE 20
2367    067C            MVI  B,VTBAR    ;SEND <ESC>-<VERTICAL BAR>       FILE 20
2369    CD0217          CALL ECOUT                                       FILE 20
236C    210817          LXI  H,XUTDC    ;SET OUTPUT ROUTINE ADDRESS      FILE 20
236F    CD7523          CALL SA2G1      ;OUTPUT SECONDARY STATUS BIT     FILE 20
2372    C39211          JMP  STERM      ;SEND TERMINATOR AND RETURN      FILE 20
                ;                                                        FILE 20
                ;****************************************                FILE 20
                ; STA2G1 - OUTPUT SECONDARY STATUS BITS *                FILE 20
                ;****************************************                FILE 20
                ;                                                        FILE 20
                ;   ENTRY:  H,L = ADDRESS OF OUTPUT ROUTINE              FILE 20
```

```
                                                                FILE 20
                                                                FILE 20
                                                                FILE 20
                   ;                                            FILE 20
                   ;  EXIT :  ALL REGISTER DESTROYED            FILE 20
                   ;          CNTFAD DESTROYED                  FILE 20
                   ;                                            FILE 20
 2375              SA2G1  EQU  $                                FILE 20
 2375   22CEFF            SHLD CTFAD     ;SET OUTPUT ROUTINE ADDRESS   FILE 20
 2378              SA2G2  EQU  $                                FILE 20
                   ;                                            FILE 20
                   ;  SEND NON-DISPLAY RAM SIZE (K)             FILE 20
                   ;                                            FILE 20
 2378   3ED0              MVI  A,320Q       ;BSPCE+1/256        FILE 20
 237A   218EFF            LXI  H,BFBGN+1    ;COMPUTE NON-DISPLAY RAM   FILE 20
 237D   96                SUB  M            ;SIZE               FILE 20
 237E   CDD10B            CALL PROT2     ;SEND NON-DISPLAY RAM SIZE    FILE 20
                   ;                                            FILE 20
                   ;  OUTPUT TERMINAL TYPE                      FILE 20
                   ;                                            FILE 20
 2381   3AFDFF            LDA  TMTYP     ;GET THE TERMINAL TYPE NUMBE  FILE 20
 2384   CDD30B            CALL PROUT     ;SEND ONLY LOWER FOUR BITS    FILE 20
                   ;                                            FILE 20
                   ;  OUTPUT REMAINING KYBD INTFACE STRAPS      FILE 20
                   ;                                            FILE 20
 2387   2AF9FF            LHLD KJMP3     ;GET JUMPERS J-Z       FILE 20
 238A   7C                MOV  A,H       ;SEND STRAPS J-K-L-M   FILE 20
 238B   CDD30B            CALL PROUT                            FILE 20
 238E   7C                MOV  A,H       ;SEND STRAPS N-P-Q-R   FILE 20
 238F   CDCF0B            CALL PROT4                            FILE 20
 2392   7D                MOV  A,L       ;SEND STRAPS S-T-U-V   FILE 20
 2393   CDD30B            CALL PROUT                            FILE 20
 2396   7D                MOV  A,L       ;SEND STRAPS W-X-Y-Z   FILE 20
 2397   CDCF0B            CALL PROT4                            FILE 20
                   ;                                            FILE 20
                   ;  OUTPUT MEMORY LOCK STATUS                 FILE 20
                   ;                                            FILE 20
 239A   3A6AFF            LDA  MKFLG     ;GET MEMORY LOCK FLAG  FILE 20
 239D   21F4FF            LXI  H,MFLG1   ;COMBINE WITH MODE FLAG       FILE 20
 23A0   A6                ANA  M         ;EXTRACT MEMORY LOCK STATE    FILE 20
 23A1   E604              ANI  MMLOK                            FILE 20
 23A3   C3D30B            JMP  PROUT     ;OUTPUT MEMORY LOCK STATE     FILE 20
                   ;                        AND RETURN          FILE 20
                   ;                                            FILE 20
                   ;**********************************************   FILE 20
                   ; SOFT KEY DATA DONE TABLE - IGNORE DC3,CR,& LF *  FILE 20
                   ;**********************************************   FILE 20
 23A3              DSTB3  EQU  $-3                              FILE 20
 23A6   0A0A              DB   12Q,12Q   ;LINE FEED             FILE 20
 23A8   5D9E              DW   DS350+B15   ;CHECK FOR IGNORE    FILE 20
 23AA   0D0D              DB   15Q,15Q   ;RETURN                FILE 20
 23AC   649E              DW   DS360+B15   ;CHECK FOR IGNORE    FILE 20
 23AE   1313              DB   23Q,23Q   ;DC3                   FILE 20
 23B0   0385              DW   ECAP1+B15   ;IGNORE IT           FILE 20
                   ;***********************************          FILE 20
                   ; SOFT KEY MODE ENABLED RANGE TABLE *          FILE 20
                   ;***********************************          FILE 20
 23AF              DSTB0  EQU  $-3                              FILE 20
 23B2   207F              DB   40Q,177Q  ;DISPLAYABLE CHARACTER        FILE 20
 23B4   EE8C              DW   SKYDS+B15   ;DISPLAY IN PROPER DISPLAY  FILE 20
                   ;*********************************            FILE 20
                   ; NORMAL CHARACTER SET ATTRIBUTES *            FILE 20
                   ;*********************************            FILE 20
```

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                                                                    FILE 20
                                                                    FILE 20
                                                                    FILE 20
                                                                    FILE 20
                                                                    FILE 20
23B3            RABLE   EQU   $-3                                   FILE 20
23B6    207F            DB    40Q,177Q   ;ALPHANUMERICS             FILE 20
23B8    57A0            DW    DPCHR+B15   ;DISPLAYABLE CHARACTERS   FILE 20
23BA    070F            DB    7Q,17Q     ;BELL,BS,HT,LF,VT,FF,CR,SO,S FILE 20
23BC    C623            DW    RB010      ;USE FUNCTION TABLE        FILE 20
23BE    1B1B            DB    33Q,33Q  ;ESCAPE                      FILE 20
23C0    D584            DW    ECAPE+B15   ;USE <ESC> RANGE TABLE    FILE 20
                ;                                                   FILE 20
23C2    007F            DB    0Q,177Q    ;ALL OTHER CODES           FILE 20
23C4    8684            DW    CKCTL+B15   ;CHECK FOR BLOCK XFR CHARS FILE 20
                ;                                                   FILE 20
                ;  <BELL> THROUGH <SHIFT IN>                        FILE 20
                ;                                                   FILE 20
23C6            RB010   EQU   $                                     FILE 20
23C6    1470            DW    ZBELL      ;BELL - SOUND KEYBOARD BELL FILE 20
23C8            RB020   EQU   $          ;<BS> THROUGH <SHIFT IN>   FILE 20
23C8    721C            DW    BKSPC      ;BS - BACKSPACE CURSOR     FILE 20
23CA    041C            DW    HTAB     ;HORIZONTAL TAB              FILE 20
23CC    C70A            DW    LFEED    ;LINE FEED                   FILE 20
23CE    6E17            DW    NFNCT      ;VT - NO FUNCTION          FILE 20
23D0    6E17            DW    NFNCT      ;FF - NO FUNCTION          FILE 20
23D2    6A1E            DW    CRRET    ;CARRIAGE RETURN             FILE 20
23D4    0C0D            DW    SFTOT    ;SHIFT OUT                   FILE 20
23D6    1F0D            DW    SFTIN    ;SHIFT IN                    FILE 20
                ;                                                   FILE 20
                ;*******************************************        FILE 20
                ; ESCAPE CHARACTER ATTRIBUTES FOR SOFT KEYS *       FILE 20
                ;*******************************************        FILE 20
23D5            SSCTB   EQU   $-3                                   FILE 20
23D8    293E            DB    51Q,76Q    ;<)> TO (>)                FILE 20
23DA    0985            DW    ECEND+B15   ;ABORT ESCAPE SEQUENCE    FILE 20
23DC    4C4F            DB    114Q,117Q  ;<L> TO <O>                FILE 20
23DE    0985            DW    ECEND+B15   ;ABORT ESCAPE SEQUENCE    FILE 20
23E0    5358            DB    123Q,130Q  ;<S> TO <W>                FILE 20
23E2    0985            DW    ECEND+B15   ;ABORT ESCAPE SEQUENCE    FILE 20
                ;              *** LOWER CASE CHARACTERS ***        FILE 20
23E4    6C6D            DB    154Q,155Q  ;<L> TO <M>                FILE 20
23E6    0985            DW    ECEND+B15   ;ABORT ESCAPE SEQUENCE    FILE 20
23E8    797B            DB    171Q,173Q  ;<Y> TO < >                FILE 20
23EA    0985            DW    ECEND+B15   ;ABORT ESCAPE SEQUENCE    FILE 20
                ;*************************************              FILE 20
                ; NORMAL ESCAPE CHARACTER ATTRIBUTES *              FILE 20
                ;*************************************              FILE 20
23E9            ECTAB   EQU   $-3                                   FILE 20
23EC    2626            DB    46Q,46Q    ;<&> - AMPERSAND           FILE 20
23EE    55A3            DW    PMSEQ+B15   ;PARAMETERIZED SEQUENCE   FILE 20
                ;                                                   FILE 20
23F0    2929            DB    51Q,51Q  ;) - SPECIFY ALT CHAR SET    FILE 20
23F2    B08C            DW    SHRST+B15                             FILE 20
23F4    3135            DB    61Q,65Q    ;<1> TO <5>                FILE 20
23F6    1024            DW    EI1                                   FILE 20
23F8    3638            DB    66Q,70Q    ;<6> TO <8>                FILE 20
23FA    2A8F            DW    TPSET+B15   ;DEFINE FIELD TYPE        FILE 20
                ;                                                   FILE 20
23FC    3C3E            DB    74Q,76Q    ;(<) TO (>)                FILE 20
23FE    1A24            DW    EI1A         ;USE INDEX TABLE         FILE 20
                ;                                                   FILE 20
2400    406D            DB    100Q,155Q  ;<@> TO <LOWER CASE M>     FILE 20
2402    2024            DW    EI2          ;USE INDEX TABLE         FILE 20
                ;               *** LOWER CASE RANGE ***            FILE 20
```

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 2404   787B          DB   170Q,173Q  ;<X> TO <LEFT BRACE>        FILE 20
 2406   7C24          DW   EI3         ;USE INDEX TABLE            FILE 20
                 ;                                                FILE 20
 2408   7E7E          DB   176Q,176Q  ;< > (TILDE)               FILE 20
 240A   5BA3          DW   STT2+B15     ;TERMINAL STATUS 2         FILE 20
                 ;                                                FILE 20
 240C   007F          DB   0Q,177Q    ;ALL OTHER CODES           FILE 20
 240E   0985          DW   ECEND+B15    ;ABORT ESCAPE SEQUENCE     FILE 20
                 ;                                                FILE 20
                 ;***********************************              FILE 20
                 ; INDEX TABLES FOR ESCAPE SEQUENCES *            FILE 20
                 ;***********************************              FILE 20
 2410            EI1    EQU  $                                     FILE 20
 2410   3D15          DW   HBSET     ;1 - HORIZONTAL TAB SET       FILE 20
 2412   4315          DW   HBCLR     ;2 - HORIZONTAL TAB CLEAR     FILE 20
 2414   7010          DW   CRALL     ;3 - CLEAR ALL TABS           FILE 20
 2416   7316          DW   STLFT     ;4 - SET LEFT MARGIN          FILE 20
 2418   8516          DW   STRHT     ;5 - SET RIGHT MARGIN         FILE 20
                 ;                                                FILE 20
 241A            EI1A   EQU  $                                     FILE 20
 241A   1B15          DW   FNCT1     ;< - SET FOREIGN MODE 1       FILE 20
 241C   0905          DW   ECEND     ;= - INVALID, ABORT SEQUENCE  FILE 20
 241E   2015          DW   FNCT2     ;> - SET FOREIGN MODE 2       FILE 20
                 ;                                                FILE 20
 2420            EI2    EQU  $                                     FILE 20
 2420   2112          DW   DLAY0     ;@ - PAUSE FOR 1 SECOND       FILE 20
 2422   531D          DW   CURPU     ;A - CURSOR POINTER UP        FILE 20
 2424   251D          DW   CURPD     ;CURSOR POINTER DOWN          FILE 20
 2426   131D          DW   CURPR     ;CURSOR POINTER RIGHT         FILE 20
 2428   181D          DW   CURPL       ;D - CURSOR LEFT            FILE 20
 242A   F508          DW   CLEAR       ;E - FULL TERMINAL RESET    FILE 20
 242C   7C10          DW   CRPHD       ;F - HOME DOWN              FILE 20
 242E   771E          DW   CRPRT       ;G - CURSOR RETURN          FILE 20
 2430   3B17          DW   XOHME       ;H - HOME TO TRANSMIT-ONLY  FILE 20
 2432   041C          DW   HTAB      ;CURSOR POINTER TAB           FILE 20
 2434   0410          DW   CEARS     ;CLEAR DISPLAY                FILE 20
 2436   BE18          DW   CEARL     ;CLEAR LINE                   FILE 20
 2438   580A          DW   LNINS     ;LINE INSERT                  FILE 20
 243A   0F0A          DW   LNDEL       ;M - LINE DELETE            FILE 20
 243C   681C          DW   IRPON       ;N - INSERT W/WRAP AROUND ON  FILE 20
 243E   8E17          DW   DLWRP       ;O - DELETE CHAR W/WRAPAROUN  FILE 20
 2440   9617          DW   CRDEL       ;P - DELETE CHARACTER       FILE 20
 2442   571C          DW   ICHON       ;Q - INSERT CHARACTER ON    FILE 20
 2444   5E1C          DW   IHOFF       ;R - INSERT CHARACTER OFF   FILE 20
 2446   5B0C          DW   RLLUP       ;S - ROLL UP                FILE 20
 2448   F90B          DW   RLLDN     ;ROLL DOWN                    FILE 20
 244A   890B          DW   NXTPG     ;NEXT PAGE                    FILE 20
 244C   DD0B          DW   PEVPG     ;PREVIOUS PAGE                FILE 20
 244E   9A19          DW   FRMON     ;FORMAT MODE ON               FILE 20
 2450   7714          DW   FRMOF       ;X - FORMAT MODE OFF        FILE 20
 2452   F013          DW   FISON       ;Y - DISPLAY FUNCTIONS ON   FILE 20
 2454   0905          DW   ECEND     ;INVALID                      FILE 20
 2456   FA15          DW   PREND     ;END PROTECT                  FILE 20
 2458   0905          DW   ECEND     ;INVALID                      FILE 20
 245A   F015          DW   PSTRT     ;START PROTECT                FILE 20
 245C   270D          DW   SATUS       ;  - SEND TERMINAL STATUS   FILE 20
 245E   9B16          DW   STTRM       ;* - STORE NON-DISPLAYING   FILE 20
                                           TERMINATOR CODE         FILE 20
                 ;                                                FILE 20
                 ;                                                FILE 20
                 ;                                                FILE 20
```

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                                                                          FILE 20
                                                                          FILE 20
                                                                          FILE 20
                                                                          FILE 20
                                                                          FILE 20
                    ;  LOWER CASE RANGE FOR 2 CHARACTER ESC SEQUENCES     FILE 20
                    ;                                                     FILE 20
2460   4611               DW    RCRSN   ;@ - SCREEN RELATIVE SENSE        FILE 20
2462   4E11               DW    CRSEN   ;A - ABSOLUTE CURSOR SENSE        FILE 20
2464   D915               DW    KBEN1   ;B - ENABLE KEYBOARD              FILE 20
2466   E615               DW    KLOKO     ;C - DISABLE (LOCK) KEYBOARD    FILE 20
2468   2316               DW    ETREN     ;D - SEND DISPLAY TO CPU        FILE 20
246A   4B15               DW    IBNGO     ;E - FAST BINARY READ           FILE 20
246C   B511               DW    DSMDM     ;F - DISCONNECT MODEM           FILE 20
246E   000D               DW    STRST     ;G - SOFT RESET                 FILE 20
2470   A919               DW    CURPH     ;H - HOME TO UNPROTECTED        FILE 20
2472   0905               DW    ECEND     ;I - BACK TAB                   FILE 20
2474   D90C               DW    SKYON     ;J - TURN ON SOFT KEY MENU      FILE 20
2476   C10C               DW    SKYOF     ;K - RESTORE NORMAL DISPLAY     FILE 20
2478   230B               DW    MLKON     ;L - MEMORY LOCK ON             FILE 20
247A   180B               DW    MKOFF     ;M - MEMORY LOCK OFF            FILE 20
                    ;                                                     FILE 20
247C                EI3   EQU   $         ;LOWER CASE <X> TO < >          FILE 20
247C   0E12               DW    DTEST     ;X - DATA COMM SELF-TEST        FILE 20
247E   E513               DW    MMDON     ;Y - MONITOR MODE ON            FILE 20
2480   B10D               DW    TEST      ;Z - SELF-TEST                  FILE 20
2482   F515               DW    SRXMO     ;  - START TRANSMIT-ONLY        FILE 20
                    ;                                                     FILE 20
                    ;********************************************         FILE 20
                    ; PRMTAB - TABLE FOR SEQUENCES WITH PARAMETERS *      FILE 20
                    ;********************************************         FILE 20
2481                PMTAB  EQU  $-3                                       FILE 20
2484   6167               DB    141Q,147Q  ;LOWER CASE <A> TO <G>         FILE 20
2486   9824               DW    PM010       ;USE INDEX TABLE              FILE 20
                    ;                                                     FILE 20
2488   6B6B               DB    153Q,153Q  ;LOWER CASE <K>                FILE 20
248A   20F0               DW    ZTLKY+B15   ;GO TO SET KEYS ROUTINE       FILE 20
                    ;                                                     FILE 20
248C   7070               DB    160Q,160Q  ;LOWER CASE <P>                FILE 20
248E   6395               DW    ICTGO+B15   ;GO TO I/O CONTROL ROUTINE    FILE 20
                    ;                                                     FILE 20
2490   7373               DB    163Q,163Q  ;LOWER CASE <S>                FILE 20
2492   1DF0               DW    ZTJPR+B15   ;GO TO SET JUMPERS ROUTINE    FILE 20
2494   007F               DB    0Q,177Q    ;ALL OTHER CODES               FILE 20
2496   0985               DW    ECEND+B15   ;ABORT ESCAPE SEQUENCE        FILE 20
                    ;                                                     FILE 20
2498                PM010  EQU  $          ;LOWER CASE <A> TO <F>         FILE 20
2498   AF10               DW    CRPOS      ;A - CURSOR POSITIONING        FILE 20
249A   0905               DW    ECEND      ;B                             FILE 20
249C   0905               DW    ECEND      ;C                             FILE 20
249E   811E               DW    DSPEN      ;D - DISPLAY ENHANCEMENT       FILE 20
24A0   0905               DW    ECEND      ;E - INVALID, ABORT SEQUENCE   FILE 20
24A2   721D               DW    DSFKY      ;F - DEFINE FUNCTION KEYS      FILE 20
24A4   A816               DW    SDCDE      ;G - SEND ATTENTION/FUNCTION   FILE 20
                    ;                         CODE                        FILE 20
                    ;                                                     FILE 20
                    ;*****************************************            FILE 20
                    ; DENTAB - DISPLAY ENHANCEMENT ESCAPE TABLE *         FILE 20
                    ;*****************************************            FILE 20
24A3                DNTAB  EQU  $-3                                       FILE 20
24A6   404F               DB    100Q,117Q  ;<@>-<O>                       FILE 20
24A8   8B9E               DW    DSPLC+B15   ;TURN ON ENHANCEMENT          FILE 20
                    ;***************************************              FILE 20
                    ; CHRSTB - ALTERNATE CHARACTER SET TABLE *            FILE 20
                    ;***************************************              FILE 20
```

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                                                                  FILE 20
                                                                  FILE 20
                                                                  FILE 20
                                                                  FILE 20
                                                                  FILE 20
 24A7              CRSTB  EQU  $-3                                FILE 20
 24AA    4043             DB   100Q,103Q  ;<@> - <C>              FILE 20
 24AC    B68C             DW   SHST1+B15   ;SET ALTERNATE CHAR SET FILE 20
                   ;                                              FILE 20
 24AE    007F             DB   0Q,177Q   ;ALL OTHER CODES         FILE 20
 24B0    0985             DW   ECEND+B15   ;ABORT ESCAPE SEQUENCE FILE 20
                   ;*****************************************     FILE 20
                   ; CRPTAB - CURSOR POSITIONING ESCAPE TABLE *   FILE 20
                   ;*****************************************     FILE 20
 24AF              CPTAB  EQU  $-3                                FILE 20
 24B2    2B2B             DB   53Q,53Q   ;<+> - PLUS SIGN         FILE 20
 24B4    FB91             DW   DPLUS+B15  ;SET SIGN FLAG TO +1    FILE 20
 24B6    2D2D             DB  55Q,55Q  ;NEGATIVE REL. POSITIONING FILE 20
 24B8    0092             DW   DMNUS+B15  ;SET SIGN FLAG TO -1    FILE 20
 24BA    3039             DB  60Q,71Q  ;VALID PARAMETER DIGITS    FILE 20
 24BC    D791             DW   DCNUM+B15 ;ACCUMULATE NUMERICAL VALUE FILE 20
                   ;                                              FILE 20
 24BE    4343             DB   103Q,103Q  ;<C>                    FILE 20
 24C0    C490             DW   CRPO1+B15   ;SET COLUMN PARAMETER  FILE 20
                   ;                                              FILE 20
 24C2    5252             DB   122Q,122Q  ;<R>                    FILE 20
 24C4    DA90             DW   CRPO3+B15   ;SET ROW PARAMETER     FILE 20
                   ;                                              FILE 20
 24C6    5959             DB   131Q,131Q  ;<Y>                    FILE 20
 24C8    CF90             DW   CRPO2+B15   ;SET SCREEN ROW PARAMETER FILE 20
                   ;                                              FILE 20
 24CA    6363             DB   143Q,143Q  ;<LOWER CASE C>         FILE 20
 24CC    C490             DW   CRPO1+B15   ;SET COLUMN PARAMETER  FILE 20
                   ;                                              FILE 20
 24CE    7272             DB   162Q,162Q  ;<LOWER CASE R>         FILE 20
 24D0    DA90             DW   CRPO3+B15   ;SET ROW PARAMTER      FILE 20
                   ;                                              FILE 20
 24D2    7979             DB   171Q,171Q  ;<LOWER CASE Y>         FILE 20
 24D4    CF90             DW   CRPO2+B15   ;SET SCREEN ROW PARAMETER FILE 20
                   ;                                              FILE 20
 24D6    2020             DB  40Q,40Q  ;SPACE - IGNORE            FILE 20
 24D8    0385             DW   ECAP1+B15                          FILE 20
 24DA    007F             DB   0,177Q    ;INVALID                 FILE 20
 24DC    0985             DW   ECEND+B15                          FILE 20
                   ;                                              FILE 20
                   ;*****************************                 FILE 20
                   ; FUNCTION DISABLE ATTRIBUTES *                FILE 20
                   ;*****************************                 FILE 20
 24DB              FISTB  EQU  $-3                                FILE 20
 24DE    0D0D             DB   15Q,15Q   ;RETURN CODE             FILE 20
 24E0    718F             DW   CARET+B15                          FILE 20
 24E2    1B1B             DB  33Q,33Q  ;ESCAPE                    FILE 20
 24E4    1F94             DW   FDESC+B15                          FILE 20
 24E6    5A5A             DB  132Q,132Q                           FILE 20
 24E8    FD93             DW   FISOF+B15                          FILE 20
 24EA    007F             DB   0,177Q    ;ALL OTHER CODES         FILE 20
 24EC    EE8C             DW   SKYDS+B15   ;ADD CHARACTER TO DISPLAY FILE 20
                   ;                                              FILE 20
                   ;*********************************************  FILE 20
                   ; SNDCTB - ACCUMULATE ATTENTION/FUNCTION CODE * FILE 20
                   ;*********************************************  FILE 20
 24EB              SDCTB  EQU  $-3                                FILE 20
 24EE    3037             DB   60Q,67Q   ;OCTAL DIGITS            FILE 20
 24F0    D791             DW   DCNUM+B15  ;ACCUMULATE VALUE       FILE 20
                   ;                                              FILE 20
```

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                                                                        FILE 20
8080 MACRO ASSEMBLER, VER 2.4            ERRORS = 0 PAGE 156            FILE 20
                                                                        FILE 20
                                                                        FILE 20
                                                                        FILE 20
  24F2   4141          DB    101Q,101Q  ;<A>                            FILE 20
  24F4   B696          DW    SDCD1+B15   ;SEND ATTENTION CODE           FILE 20
                 ;                                                      FILE 20
  24F6   4646          DB    106Q,106Q  ;<F>                            FILE 20
  24F8   4392          DW    SDCD2+B15   ;SEND FUNCTION CODE            FILE 20
                 ;                                                      FILE 20
  24FA   2020          DB    40Q,40Q    ;SPACE                          FILE 20
  24FC   0385          DW    ECAP1+B15                                  FILE 20
  24FE   007F          DB   0,177Q    ;OTHER CHARACTERS                 FILE 20
  2500   0080          DW    B15         ;TERMINATE AND RESET           FILE 20
                 ;                                                      FILE 20
                 ;**********************************                     FILE 20
                 ; DFSTAB - DEFINE SOFT KEYS TABLE *                    FILE 20
                 ;**********************************                     FILE 20
  24FF           DSTAB  EQU  $-3                                        FILE 20
  2502   2020          DB    40Q,40Q    ;SPACE                          FILE 20
  2504   0385          DW    ECAP1+B15   ;IGNORE                        FILE 20
  2506   3039          DB    60Q,71Q    ;DIGITS <0>-<9>                 FILE 20
  2508   D791          DW    DCNUM+B15  ;ACCUMULATE NUMERICAL VALUE     FILE 20
  250A   4141          DB    101Q,101Q  ;<A> - ATTRIBUTE PARAMETER      FILE 20
  250C   7F9D          DW    DF100+B15   ;STORE DEFINED ATTRIBUTE       FILE 20
  250E   4B4C          DB    113Q,114Q  ;<K> - <L>                      FILE 20
  2510   1E25          DW    DT010       ;USE INDEX TABLE               FILE 20
                 ;                                                      FILE 20
                 ;  LOWER CASE RANGE                                    FILE 20
                 ;                                                      FILE 20
  2512   6161          DB    141Q,141Q  ;<A> - ATTRIBUTE PARAMETER      FILE 20
  2514   7F9D          DW    DF100+B15   ;STORE DEFINED ATTRIBUTE       FILE 20
  2516   6B6C          DB    153Q,154Q  ;<K> - <L>                      FILE 20
  2518   1E25          DW    DT010       ;USE INDEX TABLE               FILE 20
  251A   007F          DB    0Q,177Q   ;ALL OTHER CODES                 FILE 20
  251C   0985          DW    ECEND+B15   ;ABORT ESCAPE SEQUENCE         FILE 20
                 ;                                                      FILE 20
  251E           DT010  EQU  $                                          FILE 20
  251E   871D          DW    DS110      ;DEFINE KEY NUMBER              FILE 20
  2520   8F1D          DW    DF120      ;DEFINE LENGTH OF INPUT DATA    FILE 20
                 ;*********************************                      FILE 20
                 ; ACCUMULATE SOFT KEY DATA TABLE *                     FILE 20
                 ;*********************************                      FILE 20
  251F           DSTB2  EQU  $-3                                        FILE 20
  2522   007F          DB    0Q,177Q    ;ALL CODES                      FILE 20
  2524   369E          DW    DS300+B15                                  FILE 20
                 ;                                                      FILE 20
                 ;                                                      FILE 20
                       END                                              FILE 20
NO PROGRAM ERRORS                                                       FILE 20
```

FILE 20
FILE 20
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FILE 20

SYMBOL TABLE

* 01

A	0007	AB010	1455	ABLEN	000E	ABLIN	144F	FILE 20
ABLNK	0020	ABLOC	0008	ACKSL	005C	ADEL	007F	FILE 20
ALCC	0063	ALPHA	00C5	ALTIN	0040 *	ALTIO	0010 *	FILE 20
ANL	0080 *	ANR	0040 *	AOUTB	1335	APARN	0029	FILE 20
APHNM	00C7 *	APSND	0026	ASIGN	0040	ASTAK	FF5F	FILE 20
ATOLF	0004	ATOUT	702A	ATTRM	0001	AX	0041 *	FILE 20
B	0000	B15	8000	B1LEN	FF38	B1STT	FF3A	FILE 20
B1TYP	FF39	B2DE0	0875	B2DE1	087B	B2DE2	087E	FILE 20
B2DEC	0886	B2LEN	FF35	B2STT	FF37	B2TYP	FF36	FILE 20
BASE	FF00	BASE2	FE00	BASEH	00FF	BCKT5	174E	FILE 20
BD050	089D	BD100	08B0	BD110	08B3	BD200	08C2	FILE 20
BD210	08CD	BD220	08CE	BDBFL	003D	BDBUF	FF3D	FILE 20
BDEND	FF3B	BDPTR	FF3C	BEGIN	0000	BFBGN	FF8D	FILE 20
BFBSY	0080 *	BFEND	FF8B	BFMSG	0E5F	BKFIL	FF91	FILE 20
BKMDE	0002	BKSPC	1C72	BKTRG	0001	BKTRM	7804	FILE 20
BLKSM	000F	BLKSZ	0010	BLLIM	0051	BNOCT	085A *	FILE 20
BNXMT	0002 *	BO010	0864	BOT	0020 *	BOUTB	1334	FILE 20
BRKDC	11B0	BRYGO	2829	BSEH2	00FE	BSPCE	CFFF	FILE 20
BT450	1741 *	BT500	1756 *	BT510	175C *	BY000	5000	FILE 20
BY00C	FE5E *	BY100	500C	BY960	1F27 *	BY970	1F9D	FILE 20
BYBEF	0004 *	BYCHK	283A	BYCI1	FE64	BYCI2	FE63	FILE 20
BYCIF	0004 *	BYFC1	0001	BYFC2	0002	BYFL1	FE67	FILE 20
BYFL2	FE66	BYFL3	FE65	BYFRE	5006	BYINS	0002 *	FILE 20
BYMF1	0008 *	BYMF2	0020 *	BYMF3	0040 *	BYMF4	0080 *	FILE 20
BYMOV	0001 *	BYRAM	FE67	BYSRE	5009	BYZ01	FE62	FILE 20
BYZ02	FE61	BYZ03	FE5F	C	0001	CA010	1075	FILE 20
CA040	1C9E	CA060	1CAF	CA070	1CBC	CA100	1CEA	FILE 20
CADV1	1C99	CAFLG	FF67	CAIN0	1765	CAIN1	1766	FILE 20
CARET	0F71	CARIN	FF9C	CBASE	00FF	CBDLY	0020	FILE 20
CBFL2	234F	CBLNK	FF53	CBLTM	FF52	CBLXF	0FE5	FILE 20
CBRKY	000A	CCMFL	1351	CD000	1807	CD010	17A1	FILE 20
CD020	17CD	CD050	17FE	CD100	1816	CD110	181F	FILE 20
CD120	1846	CD130	1854	CD140	185B	CD150	1869	FILE 20
CD200	186D	CD210	1871	CD250	1885	CD260	1889	FILE 20
CD400	188E	CD500	1897	CD510	189E	CD515	18AB	FILE 20
CD520	18AD	CDCDP	282C	CDEXC	0008 *	CDSPF	0FBC	FILE 20
CEARL	18BE	CEARS	1004	CEDIT	0FC2	CEKCC	0040 *	FILE 20
CER01	191E	CER02	191F	CERL0	18E0	CERL1	18E3	FILE 20
CERLA	18D6	CFLGS	FFF8	CHAIN	176A	CHAR	FF88	FILE 20
CHINT	03C4	CHSAV	FF98	CI000	03B6	CI010	03D3	FILE 20
CI020	0401	CI030	0407	CI050	041C	CI100	042D	FILE 20
CI104	500F	CI110	0438	CI200	0459	CI270	047E	FILE 20
CIADR	FF33	CIBPT	FF2F	CICNT	FF2C	CICSM	FF2A	FILE 20
CIJMP	FFE0	CIL	0001 *	CINT0	03A4	CINT1	042D	FILE 20
CINT2	0414	CINTR	283D	CIOKY	0008	CIR	0002 *	FILE 20
CISPT	FF31	CISTA	FF29	CITRL	FF2B	CIVEC	FFE1	FILE 20
CK010	0F9A	CK050	0F9D	CK060	0FA9	CK070	0FAC	FILE 20
CK100	0FAD *	CK150	0FAF	CK160	0FB6	CKCT1	0498	FILE 20
CKCTL	0486	CKFM0	176F	CKFMS	1773	CKFMT	1778	FILE 20
CKLI0	0F86	CKLIM	0F8C	CKMLK	177E	CKRTN	FF86	FILE 20
CKSFK	1789	CKSUM	08D9 *	CL120	1901	CL160	190C	FILE 20
CL310	191A	CL400	191C	CL510	1921	CL540	1932	FILE 20
CL544	1935	CL550	193B	CL580	194C	CLEAR	08F5	FILE 20
CLLIM	0020	CLNMD	0FD4	CLRED	2808	CLTST	FF75	FILE 20
CMMON	FFFF	CMND	FF55	CNDIS	0001	CNDLF	0AC1	FILE 20
CNDTN	2814	COMMA	002C *	COUNT	FF84	CP025	10F2	FILE 20

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CR010  0F80     CR050  5012     CR100  1153     CR200  118A          FILE 20
CRAD2  1C78     CRADR  FFC3     CRADV  1C7B     CRAL1  1074          FILE 20
CRALL  1070     CRCOL  FFC1     CRDEL  1796     CRDFL  15E0          FILE 20
CRDKY  00A0 *   CRDL1  1816     CRDL2  18B5     CRET1  1E7A          FILE 20
CRFKY  FFA4     CRINS  5003     CRLF   1D0D     CRLOC  0002          FILE 20
CRMF2  051E     CRMTE  0FDF     CRPH1  19AE     CRPHD  107C          FILE 20
CRPL1  1D1A     CRPL2  1D51     CRPO1  10C4     CRPO2  10CF          FILE 20
CRPO3  10DA     CRPO4  110D     CRPOS  10AF     CRPRT  1E77          FILE 20
CRRET  1E6A     CRROW  FFC0     CRSEN  114E     CRSET  FF72          FILE 20
CRSTB  24A7     CRTRG  0000     CRTRM  0002     CRXON  0FFD          FILE 20
CS100  103E     CS110  1049     CS120  104E     CS130  1052          FILE 20
CS200  1059     CS210  105A     CSNGO  1159     CSPEN  FF77          FILE 20
CSTAT  FF66     CSTOR  FF00 *   CTFAD  FFCE     CTMON  282F          FILE 20
CTOFF  0080     CTRLO  FF62     CTUIN  0080     CTXFR  0002 *        FILE 20
CU010  1CD0     CU100  08DC     CU110  08F2     CUPD1  1D33          FILE 20
CUPU1  1D62     CUPU2  1D6B     CURAD  1CCA     CURPD  1D25          FILE 20
CURPH  19A9     CURPL  1D18     CURPR  1D13     CURPU  1D53          FILE 20
CX     0043 *   D      0002     D0CTI  2835     D2SND  0080          FILE 20
DAOFF  0060     DC010  11C1     DC2    0012 *   DC2GO  119D          FILE 20
DC3    0013     DCERR  11C6 *   DCHAR  FF89     DCNUM  11D7          FILE 20
DCRDX  000A     DCTOF  1412     DELAY  1228     DF100  1D7F          FILE 20
DF120  1D8F     DF200  1D94     DF210  1DA1     DF220  1DA4          FILE 20
DFLGS  FF6E     DFSKY  0008     DG010  12BB     DG020  12C3          FILE 20
DG100  12D2     DG110  12EB     DG200  12FF     DG210  130E          FILE 20
DG220  131C     DG225  131F     DG230  1326     DH010  2077          FILE 20
DH020  207A     DH100  208D     DI100  2029     DI110  203E          FILE 20
DIOFF  0010 *   DJMP0  0080 *   DJMP1  0001 *   DJMP2  0002 *        FILE 20
DJMP3  0004 *   DJMP4  0008 *   DJMS2  7806 *   DJMSK  7805          FILE 20
DLAY0  1221     DLHOL  0010 *   DLTRM  0000     DLWRP  178E          FILE 20
DM010  1202     DM500  197D     DM510  1983     DMCT1  11C2          FILE 20
DMCTL  11B7     DMERR  0001     DMINT  11A9     DMNUS  1200          FILE 20
DN005  11E1     DN010  11F0     DNTAB  24A3     DP010  04AB          FILE 20
DP020  04C1     DP220  1297     DPASC  1FDF     DPBGN  FFAA          FILE 20
DPBTM  0040     DPCH0  205A     DPCH1  208E     DPCHR  2057          FILE 20
DPEND  FFA8     DPFNC  0001     DPLIM  FAFF     DPLUS  11FB          FILE 20
DPMS0  1958     DPMS1  1959     DPMSG  195C     DPSG0  12B0          FILE 20
DPSTR  FE4F     DPTAB  04C5     DPTCH  049D     DPTST  2051          FILE 20
DPTYP  FFAE     DS010  1965     DS020  1EB7     DS030  1EC5          FILE 20
DS035  1EF1     DS040  1EF9     DS042  1F0E     DS043  1F1D          FILE 20
DS044  1FB5     DS045  1FB8     DS050  1FC7     DS054  1FD5          FILE 20
DS060  1FDF     DS070  1FF4     DS080  1FFE     DS090  200E          FILE 20
DS092  2014     DS093  2022     DS100  127D *   DS110  1D87          FILE 20
DS114  2047     DS120  0927     DS140  0939     DS160  0952          FILE 20
DS170  096D     DS175  096E     DS180  0975     DS200  1283          FILE 20
DS210  098B     DS215  1290     DS220  09A2     DS230  1E00          FILE 20
DS240  09AC     DS250  1E0C     DS300  1E36     DS350  1E5D          FILE 20
DS360  1E64     DS400  09B2     DSCNT  0006     DSEN1  12A6          FILE 20
DSEND  124D     DSFKY  1D72     DSLN1  0F1D     DSLN2  0F20          FILE 20
DSLN3  0F23     DSLN4  0F24     DSLNK  0F14     DSMDM  11B5          FILE 20
DSPC0  1E90     DSPC1  1E92     DSPC2  1E94     DSPEN  1E81          FILE 20
DSPL0  1FE5     DSPL1  0903     DSPL2  090F     DSPLA  1E9B          FILE 20
DSPLC  1E8B     DSPLY  0004 *   DSPST  FFFE     DSTAB  24FF          FILE 20
DSTB0  23AF     DSTB2  251F     DSTB3  23A3     DT010  251E          FILE 20
DTATR  0040 *   DTCOM  0020 *   DTEST  120E     DVFLG  FE7F          FILE 20
DX     0044 *   DXB2D  121B     DY010  1231     DY020  1235          FILE 20
E      0003     EC010  04E7     ECAP0  04F5     ECAP1  0503          FILE 20
ECAPA  04F3     ECAPB  04FB     ECAPE  04D5     ECEN1  0515          FILE 20
ECEND  0509     ECFLG  FFD1     ECINP  0008     ECLWD  00E4          FILE 20
ECOUT  1702     ECTAB  23E9     EDBLK  0007     EDCOL  FF21          FILE 20
EDDSP  0080     EDIT   0010     EDROW  FF20     EDTST  0006          FILE 20
EHLIM  00BF     EHNCF  00FF     EHOUT  FF76     EI1    2410          FILE 20
EI1A   241A     EI2    2420     EI3    247C     EL100  134A          FILE 20
ELADR  FF94     ELMOV  09C9     ELMV0  09C1     EM100  09EA          FILE 20
EM110  09F6     EM130  0A07     ENDPR  00C1     EOF    0001 *        FILE 20
EOL    00CC     EOLMV  FF90     EONTF  FFCD     EOP    00CE          FILE 20
EOUTB  132F     EP010  20BB     EP020  20DF     EP030  20E4          FILE 20
EP100  20E9     EP110  20FF     EPAND  2095     ER100  1365          FILE 20
EREOP  0E88 *   ERFLG  FFF7     ESC    001B     ESCS0  008E          FILE 20
ETB2D  0001 *   ETLCL  133C     ETRCD  0098     ETREM  1357          FILE 20
ETREN  1623     ETWRP  0008 *   EVD    0002 *   EW     0080 *        FILE 20
```

FC100	14A8	FC110	14B3	FC200	14BB	FC230	14DE	FILE 20
FC240	14F1	FC242	14F6	FC244	14FC *	FC246	1506	FILE 20
FC247	1517	FC290	14F0	FCENT	14BD *	FCLIM	00A1	FILE 20
FCLWR	0098	FCODE	00F0	FCPTY	0080 *	FCRST	0004	FILE 20
FCTAB	1431	FDCHO	1B1F	FDCHR	1B51	FDCHU	1B3B	FILE 20
FDCU1	1B46	FDESC	141F	FDLSO	1BDA	FDLST	1BDE *	FILE 20
FDRAM	0524	FDSEP	00C4 *	FDSR1	1A3B	FDSR2	1B06	FILE 20
FDSRB	1B05	FDSRX	1AA2	FDTAB	145E	FDTB1	1462	FILE 20
FDTB2	146F	FECNT	147F	FESC1	142B	FEYGO	13C6	FILE 20
FF	000C *	FF010	1409	FG010	13D2	FILL	00C3	FILE 20
FISOF	13FD	FISON	13F0	FISTB	24DB	FIVE	0035	FILE 20
FLCHR	FF8F	FLDSR	1A46	FLDUP	0080	FLINE	FF9F	FILE 20
FLNUM	FF5E	FLRED	0004	FM010	0538	FNCT1	151B	FILE 20
FNCT2	1520	FNDCH	1B22	FNMD1	000E	FNMD2	000F	FILE 20
F0100	13F2	FORGN	0080	FOUR	0034	FPS	0004 *	FILE 20
FR005	1B58	FR010	1B5C	FR080	1A57	FR100	1A64	FILE 20
FR105	1B70	FR110	1BA6	FR120	1A6A	FR140	1AA2	FILE 20
FR150	1BA8	FR160	1BC0	FR200	1AA8	FR205	1BC7	FILE 20
FR240	1AC4	FR250	1BD7	FR260	1BD8	FR300	1AD7	FILE 20
FR340	1AE6	FR360	1AFD	FR400	1B4A	FRMAT	0008	FILE 20
FRMOF	1477	FRMON	199A	FS010	1BE3	FS020	1BEE	FILE 20
FS030	1BEF	FS035	1BF4	FS040	1BF7	FS050	1BFA	FILE 20
FSALT	7029	FSOUT	0010	FST	0004 *	FSTBL	FF92	FILE 20
FT200	13A7	FT210	13AB	FTAD1	01E0	FTADJ	00DF	FILE 20
FTBIN	000A *	FTCTL	FF8A	FTK2D	0010	FTKEY	137B	FILE 20
FTRAM	9100	FTSND	0020 *	FWD	0002 *	FX	0046	FILE 20
GAP	0020 *	GB005	054E	GB010	0551	GB100	0566	FILE 20
GBLKF	05BF	GC010	0580	GC020	0588	GC030	059E	FILE 20
GC050	05AA	GC100	05B8	GEN	0020 *	GF010	1536	FILE 20
GFCTK	1525	GL100	05ED	GL200	05FB	GL210	0604	FILE 20
GL220	060E	GMOD1	0FC8	GMODE	0FCE	GNWLN	0612	FILE 20
GO	012F	GO010	0153	GO1	0155	GS010	2111	FILE 20
GS020	2155	GS030	2179	GS040	2196	GS045	21AC	FILE 20
GS050	21AD	GS060	21B5	GS100	21CF	GS110	21E7	FILE 20
GS150	21F5	GS160	21F8	GS200	21FC	GS210	2224	FILE 20
GS220	2236	GS225	2246	GS230	2249	GS300	225F	FILE 20
GS310	227E	GS320	2281	GS350	22C6	GS360	22CC	FILE 20
GTADR	FF73	GTBLK	05C4	GTBUF	053F	GTDC1	05A4	FILE 20
GTDCM	0570	GTDSP	2169	H	0004	HB100	1C1E	FILE 20
HB120	1C23	HB130	1C3F	HB140	1C43	HB160	1C27 *	FILE 20
HB200	1C50	HBCLR	1543	HBLEN	000A	HBSET	153D	FILE 20
HBTBL	FF78	HC100	1083	HC200	109F	HC210	10AB	FILE 20
HDER1	0010 *	HDERR	0004 *	HDSHK	0040	HG010	11D1	FILE 20
HLCNT	FF51	HNGUO	11C9	HOL	0010 *	HP050	19FF	FILE 20
HP060	1A14	HP100	1A25	HP110	1A28	HTAB	1C04	FILE 20
HX	0048 *	IBASE	0080	IBNGO	154B	IBSYC	1551	FILE 20
IBUF1	FC00	IBUF2	FD00 *	IBUFH	00FC *	IBUFL	0000 *	FILE 20
ICCNT	FFD5 *	ICDEV	FFDB *	ICDPT	FF4C	ICERR	FF4F	FILE 20
ICHON	1C57	ICINP	FFD9 *	ICKEY	2802	ICMND	FFD7 *	FILE 20
ICNTL	281A	ICOUT	FFDA *	ICRCL	8007	ICRRW	8027	FILE 20
ICSGN	FFDD	ICTCO	800B	ICTDI	802B *	ICTDO	802B *	FILE 20
ICTGO	1563	ICTMN	1569	ICTSI	800B *	ICTYP	FFD8 *	FILE 20
IDATA	FFDE	IDISP	8007	IDNGO	2820	IERMS	0E77	FILE 20
IERRB	0020	IFLG2	FF64	IFLGS	FF65	IG055	22FB	FILE 20
IG060	2310	IG070	2314	IG090	2325	IG100	232B	FILE 20
IH010	1C59	IHOFF	1C5E	II010	0179	II020	0181	FILE 20
II110	01D3 *	II130	01E4	II210	0207	II220	020E	FILE 20
II310	0235	II400	0286	IINTR	1590	IITDO	22D0	FILE 20
IITD1	2342	IITDG	22D9	IITDS	0646	IJMP	00C3	FILE 20
IKBCO	8083	IKEYS	156F	IKYTB	1443	INIT	0172	FILE 20
INTRM	0001	INVRS	0082	IO010	15B0	IO020	15B5	FILE 20
IOBUF	FC00	IOCTU	800B	IOKB	8003	IOORG	2800	FILE 20
IPDEV	FF4E	IPSGN	FFDC	IPTR1	800D	IPTR2	8005	FILE 20
IRDGO	2823	IRET	00C9	IRMG1	1586	IRMGO	1576	FILE 20
IRPON	1C68	ISCHR	0002	ISTAO	FF48	ISTA1	FF49	FILE 20
ISTA2	FF4A	ISTA3	FF4B	ISTGO	281D	ISWRP	0002	FILE 20
ITERR	15B6	ITFLG	FFF6	ITRPT	15CA	ITVEC	9165	FILE 20
KBEN	15D3	KBEN1	15D9	KBLOK	15EB	KBUF2	FF12	FILE 20
KCTSH	FF12	KDCSW	FFFC	KDLOK	0040	KFCTK	FF71	FILE 20
KJMP2	FFFA	KJMP3	FFF9	KJMPR	FFFB	KLOKO	15E6	FILE 20

LD200	0A48	LD300	0A4E	LDATA	FFDE	LF	000A	FILE 20
LF100	0AD9	LF1KY	0004	LF2KY	0002	LFEED	0AC7	FILE 20
LFFKY	0001 *	LFPOS	0010 *	LHFKY	0008 *	LHKSM	FFD7 *	FILE 20
LI050	0685	LI200	0AB9	LKLIM	00D0	LKSAV	FF96	FILE 20
LLINE	FFA1	LNDEL	0A0F	LNDLO	0A32	LNINO	0A7F	FILE 20
LNIN1	0A94	LNINA	0A91	LNINS	0A58	LNWRP	0004	FILE 20
LP	0040 *	LPM	0001 *	LRCHK	0004 *	LRMSG	0E82 *	FILE 20
LTBKT	005B	LTBRC	007B	LTCOL	FFC8	LTCTU	0001 *	FILE 20
LTDCD	FFC6	LTFMT	FFC5	LTFWD	0002 *	LTLIN	FFC9	FILE 20
LTLU1	0AF7	LTLU2	0AF8	LTLUP	0AF4	LTMGN	FFBF	FILE 20
LTRED	FF25	LTROW	FFC7	LWBUF	00B0	LWDSP	00D0	FILE 20
LX	004C	M	0006	MFLG1	FFF4	MFLG2	FFF3	FILE 20
MFLGS	FF70	MGPT1	FFF1	MGPT2	FFEF	MGPT3	FFED	FILE 20
MGPT4	FFEB	MGPT5	FFE9	MGPT6	FFE7	MGPT7	FFE5	FILE 20
MGPT8	FFE3	MINUS	002D *	MK010	0B75	MKFLG	FF6A	FILE 20
MKOFO	0B11	MKOFF	0B18	MKROW	FF6B	MKSCO	0B3C	FILE 20
MKSC1	0B4E	MKSCH	0B46	MLGS2	FF6F	MLKOF	1035	FILE 20
MLKON	0B23	MLOCK	0B63	MMDON	13E5	MMLOK	0004	FILE 20
MO005	0B2E	MO010	0B31	MOCKO	0B5C *	MOCK1	0B72	FILE 20
MS120	0B4F	MVCHR	0B7C	MXCOL	004F	MXROW	0017	FILE 20
MYEOL	0040	MYEOP	0020	NBLKS	FF99	NCHAR	FF9B	FILE 20
NDCST	0010 *	NDRVR	0E91	NEXIT	0B59	NFCTK	0008	FILE 20
NFNCT	176E	NH010	0BCD	NMBER	00C6	NMSWP	000F	FILE 20
NPNDG	0008	NRMAL	0080	NROLL	FF83	NROWS	FF9A	FILE 20
NRWST	0080	NSEND	0004	NSIGN	0080	NT040	0B91	FILE 20
NT100	0BA1	NT110	0BA6	NT120	0BB5	NTCHO	0BBA	FILE 20
NTCHR	0BBB	NTEST	0004	NTPG1	0BA1	NTRED	FF27	FILE 20
NTSMS	0E89	NULL	0000 *	NUM2K	0800 *	NWCOL	FFDB	FILE 20
NWROW	FFDA	NX	004E	NXTPG	0B89	OSTOR	FFD0	FILE 20
OTDEV	FF4D	OTHER	FF56	OTRDX	0008	PARM1	FFDB	FILE 20
PARM2	FFDA	PARM3	FFD9	PARM4	FFD8	PARM5	FFD7	FILE 20
PARM6	FFD5	PB220	06AB	PB225	06BB *	PB300	06C9 *	FILE 20
PB350	06CD	PB400	06D4	PB410	06DE	PCCTL	FFF5	FILE 20
PEVPG	0BDD	PGSTR	0008	PINTR	0008 *	PLUS	002B *	FILE 20
PM010	2498	PMSEQ	2355	PMTAB	2481	PNTAL	0010 *	FILE 20
P0010	15FC	P0100	1615	POCSR	0070	POFLD	FFC2	FILE 20
POLL	0040	POMPT	000D	PR120	0282	PRABT	FE78	FILE 20
PRBBG	FE7D	PRBD2	001F	PRBLN	0100 *	PRBPT	FE79	FILE 20
PRCF2	8045	PRCL1	800F	PRDA2	8065 *	PRDY1	0001 *	FILE 20
PRDY2	0002 *	PREND	15FA	PRFLG	FE77	PRHD2	00E0 *	FILE 20
PRI10	0270	PRINI	0261	PRIOD	002E *	PROL2	0020 *	FILE 20
PROT1	0BD2 *	PROT2	0BD1	PROT3	0BD0 *	PROT4	0BCF	FILE 20
PROUT	0BD3	PRP01	0080 *	PRSB2	0040 *	PRSPT	FE7B	FILE 20
PRST1	800D	PRST2	8025	PSTRT	15F0	PSW	0006	FILE 20
PTBLK	068E	PTBRK	0005	PTDLY	05DC *	PTLIN	06F2	FILE 20
PTOT1	802D *	PTOT2	8045	PTPLN	2832	PV100	0BEA	FILE 20
PV110	0BED	PVPG1	0BE8	PX	0050	QUOTE	0027 *	FILE 20
R4010	0750	RA120	0782	RA130	078E	RA140	0796	FILE 20
RA200	079B *	RA210	07A7	RA220	07B5	RA240	07BF	FILE 20
RA245	07CA	RA250	07D2	RA255	07DC	RA260	07DD	FILE 20
RA270	07FC	RA440	0758	RA460	0763	RABLE	23B3	FILE 20
RABRT	2837	RADDR	0769	RADIX	FFD4	RADRO	076C	FILE 20
RADR1	0715	RADR2	0719	RADR3	071C	RADR4	072E	FILE 20
RADRA	0705	RADRB	070D	RAERR	0E73 *	RB010	23C6	FILE 20
RB020	23C8 *	RCINI	0010 *	RCKEY	280B	RCORD	0040	FILE 20
RCPGE	0020 *	RCRSN	1146	RCRWD	0008 *	RCSEP	7803	FILE 20
RD080	0C23	RD085	0C3E	RD090	0C4C	RDKEY	2805	FILE 20
RDY	0040 *	REC	0008 *	RESET	0000	RETDC	0002	FILE 20
RETKB	0007	RGCTU	0002 *	RHFKY	0010 *	RIP	0004 *	FILE 20
RKYCD	009D	RL080	0C9A	RL090	0CA8	RL100	0C85	FILE 20
RL200	0C87	RLLCT	FF82	RLLDN	0BF9	RLLUP	0C5B	FILE 20
RLSNS	0004	RLTAK	FF61	RLUP1	0CA2	RLUP2	0C88	FILE 20
RLUP3	0C8A	RLUPC	0C8B	RMERR	0E6F *	RMOTE	0008	FILE 20
RMSET	0010	RNGTA	FFD2	RRDGO	2826	RSTON	0002	FILE 20
RTCTU	2817	RTDSP	1990	RTJMP	0001	RTKEY	0003 *	FILE 20
RTMGN	FFBE	RTOFF	0004	RTTMR	FFD0	RUN	0001	FILE 20
RVMDE	0020	RWOWT	0001 *	RX	0052	RXERR	0E7A *	FILE 20
RXMIT	0001 *	SA010	0D85	SA2G1	2375	SA2G2	2378	FILE 20
SA2G0	2361	SACOM	0001	SALLA	0061	SALLD	0064	FILE 20
SALLF	0066	SALLI	0069 *	SALLK	006B	SALLP	0070 *	FILE 20

SB080	16E9 *	SBFL2	2349	SBLMD	0004 *	SC010	0DAE	FILE 20
SCHAR	000B	SCHR1	0D9C	SCHST	000D	SCMFL	1375	FILE 20
SCTKY	2000	SDATN	000B	SDC2	0100	SDCD1	16B6	FILE 20
SDCD2	1243	SDCDE	16A8	SDCTB	24EB	SDFCT	000C	FILE 20
SDVST	0800 *	SETCH	0020 *	SEVEN	0037	SFOR1	00FE	FILE 20
SFOR2	00FD	SFTIN	0D1F	SFTOT	0D0C	SHFT1	0D13	FILE 20
SHFT2	0D1A	SHRST	0CB0	SHST1	0CB6	SI	000F	FILE 20
SINRY	0002	SIX	0036	SKCHK	0F36	SKYAT	00C8	FILE 20
SKYCD	009E *	SKYDS	0CEE	SKYOF	0CC1	SKYON	0CD9	FILE 20
SL010	163E	SL020	163F	SLANT	002F *	SLDIS	0002	FILE 20
SLECT	0020 *	SLKEY	280E	SLXF0	1626	SLXF1	1631	FILE 20
SLXFA	1629	SNCNT	FF54	SNTER	4000	SNVEC	9168	FILE 20
SO	000E	SO010	0CE2	SOREA	15E4	SOWOF	00FF	FILE 20
SOWON	0020	SP	0006	SP010	1E29	SPCTU	FF24	FILE 20
SPFLG	00C4	SPOWL	FF6C	SPRPT	0009	SPSTR	FFAF	FILE 20
SPTRM	0008	SPXFR	FFFF	SR010	1134	SRNRW	FFD9	FILE 20
SRSEN	1000	SRTAK	405F *	SRTB1	16C5	SRTBL	16BF	FILE 20
SRTST	0005	SRXMO	15F5	SSCTB	23D5	SSTAT	0200	FILE 20
STACK	9160	START	028E	STAT2	0400	STCNT	FF5D	FILE 20
STDF0	166B	STDFL	166D	STDLY	0032	STEND	0010	FILE 20
STER1	1195	STERM	1192	STERR	0008 *	STFRN	000C	FILE 20
STKYS	FFA6	STLCL	0004	STLFT	1673	STMF2	1695	FILE 20
STMON	0008	STNRM	0009	STPR	00C0	STREM	0003	FILE 20
STRHT	1685	STRM1	1652	STRM2	165B *	STRM3	1666	FILE 20
STROM	0080	STRST	0D00	STT2	235B	STTRG	0001	FILE 20
STTRM	169B	SVDUN	8000 *	SVINP	FF23	SVOUT	FF22	FILE 20
SVREC	0001	SWAP	1E1B	SWAP0	1E15	SWAP1	1E21	FILE 20
SX	0053 *	TAK	0008 *	TCHAR	FF68	TEMP	FF9D	FILE 20
TEMP1	FF9E	TEST	0DB1	THREE	0033	TI010	0823	FILE 20
TI020	082B	TI100	083F	TI110	0854	TIACK	0000 *	FILE 20
TIGGR	7802	TINTR	0805	TIOFF	0020 *	TKI	0080 *	FILE 20
TLINO	FFA3	TMFCT	FF6D	TMIEN	0002	TMRON	0001	FILE 20
TMTST	0DC0	TMTYP	FFFD	TP100	0F04	TPCOL	FF85	FILE 20
TPLIN	FFCB	TPSET	0F2A	TPUP1	0F05	TPUPD	0EF8	FILE 20
TRINT	0003	TSTAL	FF50	TSTOK	0002	TT199	0DDF	FILE 20
TT200	0DE4	TT220	0DEB	TT240	0DF6	TT420	0E21	FILE 20
TT440	0E36	TTCTU	2811	TWO	0032	TX	0054	FILE 20
ULKKB	0002	UNIT0	FF63	UREAD	0002	USL	0010 *	FILE 20
UX	0055	VERSN	0050	VRIFY	0080 *	VTBAR	007C	FILE 20
WBSR	0020 *	WL010	02A7	WL020	02D0	WL200	02E5	FILE 20
WL205	02FD	WL210	031A	WL215	0300	WL250	032D	FILE 20
WL260	032F	WL270	0350	WL280	0357	WL290	035D	FILE 20
WL300	0364	WL310	0387	WLOOP	02A1	WPDEL	0020	FILE 20
WPFLG	0040	WTERR	0020 *	XD000	0F47	XD001	1710	FILE 20
XD005	171B	XD010	0F4A	XD020	0F66	XD030	0F6C	FILE 20
XD050	1731	XF2DS	0080	XOHME	173B	XONLY	00C2	FILE 20
XP010	171D	XRASP	FE80	XRLIM	FF47	XS2BF	0020	FILE 20
XS2DS	0F4C	XUTDC	1708	Y960B	1F44	Y960C	1F47	FILE 20
Y960D	1F4D	Y960G	1F64	Y960K	1F7A	Y960M	1F8F	FILE 20
Y970D	1FAF	Y970E	1FB3	YDBUF	FB00 *	YMS01	0ECB	FILE 20
YMS03	0EA2	Y00F	000F	Y080	0080	Y0A0	00A0	FILE 20
Y0F0	00F0	YX	0059	ZBBAS	7000	ZBCTL	7008	FILE 20
ZBELL	7014	ZBMON	700B	ZCBAS	7800	ZCCTL	7811	FILE 20
ZCINT	7826	ZCMON	780E	ZCTST	7814	ZDBIN	7823	FILE 20
ZERO	0030	ZETDC	7817	ZETKY	7005	ZETRN	0767	FILE 20
ZGBIN	781D	ZLMD1	7011	ZLPCK	7023	ZLXMT	701A	FILE 20
ZN2DC	780B	ZNIDC	7808	ZNIKB	7002	ZSPMS	0040 *	FILE 20
ZTBIN	7820	ZTJPR	701D	ZTLKY	7020	ZTMD1	700E	FILE 20
ZTXMT	7017	ZUMCK	7026	ZUTDC	781A	ZX	005A *	FILE 20
								FILE 20